

# Canada and U.S. still haggling over fishing boundaries

## Russian eye on Pacific

THE Soviet Union is planning expeditions into areas of the Pacific Ocean to "define new potential fishing targets."

Vladimir Kurnev, Deputy Minister of Fisheries in the USSR, says work is going on to widen the scale of fishing on the high seas and develop deepwater fishing. This has been made necessary by limits extensions which have cut Soviet fishing vessels off from many of their grounds.

There were changes in the species of fish being brought in. It was necessary therefore to work to increase the variety available and to improve the quality of new species.

The Soviet processing industry, he said, aimed to raise the percentage of fish used for food products and for canning by about 15 per cent from the 1975 level of 65 per cent.

## CORAL DANGER

BLASTING or breaking up of coral reef can cause explosive outbreaks of ciguatera fish poisoning, according to the World Health Organisation.

Normally many different edible fish feed on the algae of coral reefs. Dinoflagellates (microscopic plants) live attached to these algae and they produce small amounts of toxin which gets more and more concentrated in the food chain.

With the disturbance of the environment of these organisms — the coral reef — they proliferate.

The toxic content of the algae increases. Feeding fish take in a larger amount, and humans eating the fish run the risk of poisoning.

## Roumania deal

ROUMANIA is the latest of the countries fishing off the east coast of Canada to come to an agreement over fishing inside the 200-mile zone.

The agreement sets out the terms and conditions governing continued fishing by Roumanian ships inside the Canadian EEZ.

It allows them to fish there under Canadian control for resources surplus to the local requirements.

TALKS ON new ocean boundaries between Canada and the United States, arising from their 200-mile zones, were extended for a second time in January.

Washington lawyer Lloyd Cutler and Canada's Ambassador to the European Economic Community, Marcel Cadieux, were expected to meet again in mid-February for another, and hopefully final, session.

They began their deliberations in September. In an interim report in October, they proposed joint commissions to manage fisheries which affected both zones and shared access for hydrocarbon resources. These moves could reduce the importance of where the boundary would go.

They had four boundaries to agree, in the Gulf of Maine where Coast claimed part of the rich Georges Bank, seaward from the Strait of Juan de Fuca, between the State of Washington and the province of British Columbia; below B.C. and the Alaskan Panhandle; and the Beaufort Sea in the Arctic below Alaska and the Yukon Territory.

By the end of January, Cadieux and Cutler had reached the point where the Gulf of Maine boundary and the division of trans-boundary fish stocks on both coasts were the main issues.

# fishing news international

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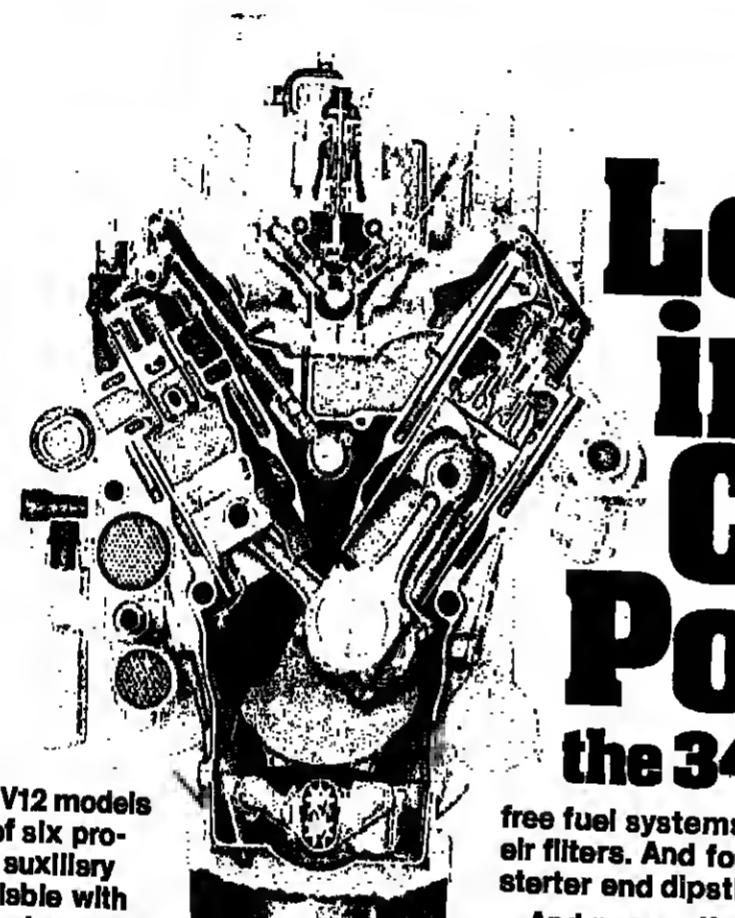
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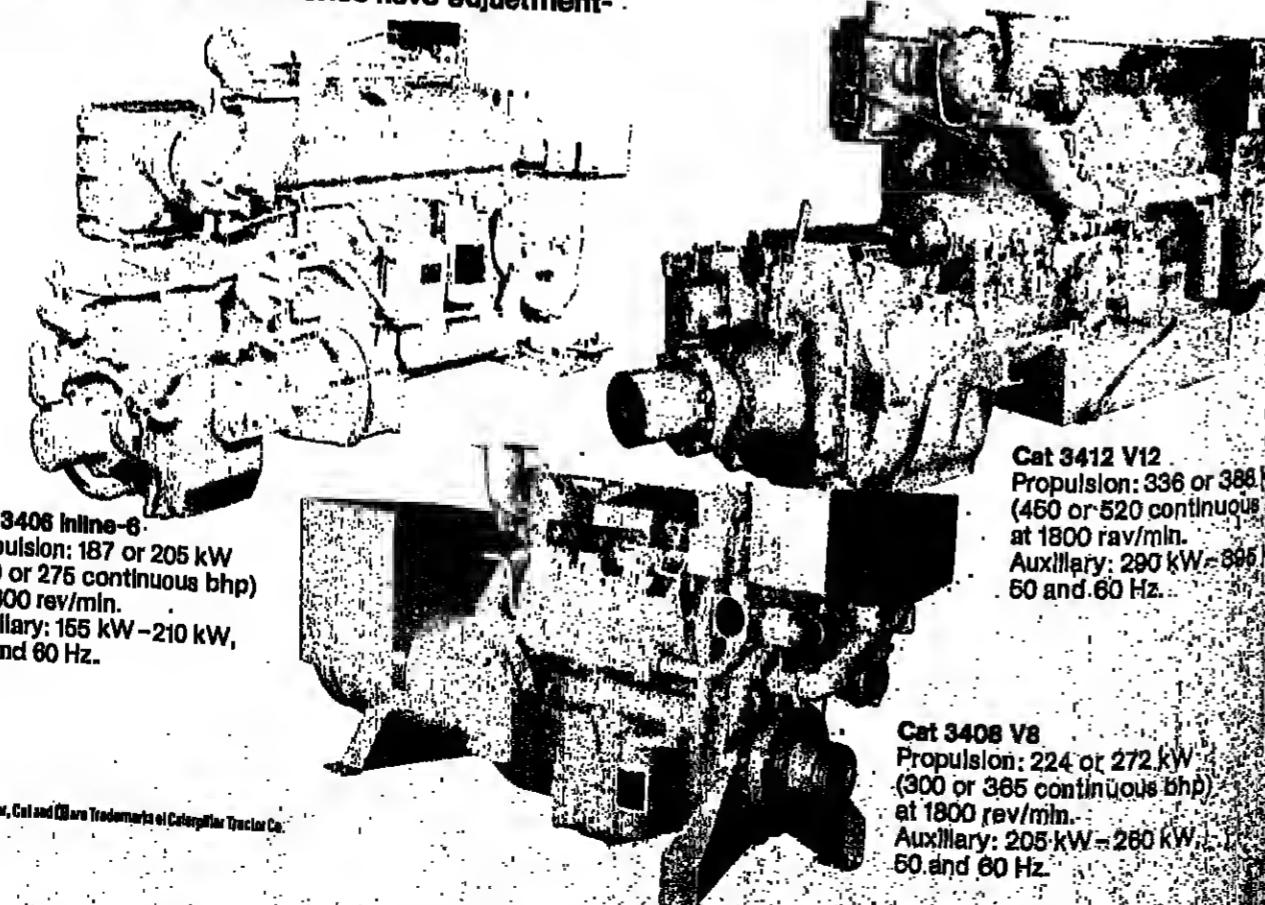
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EVER-INVENTIVE, Norway's fishing industry has developed a new breed of ship to meet the challenge of a new fishery. The fishery is that for blue whiting in the north-east Atlantic; the ships include the 55.7 metre long *Torbas* and the 71.3 metre *Libas*, the largest and fastest Norwegian fishing vessel.

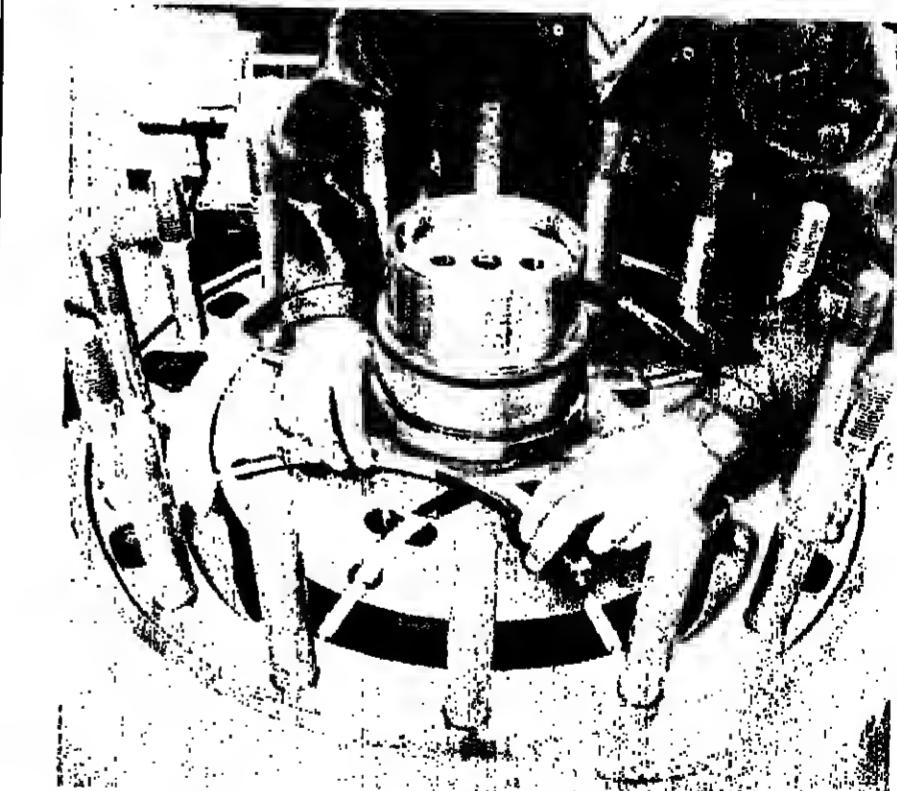
No doubt, these will one day be applied. Until then, the fish race is on and the prize of big catches will go to the ships with the capacity and the design to use the resource.

But for Norway the same ships must also be able to participate in the winter and summer capelin fisheries when the blue whiting are not concentrated.

The designer's answer is a large deepsea combination ship — purse seiner for capelin and mid-water trawler for blue whiting.

This year, the capelin catch has been disappointing. By mid-March it was only about half what it was in winter 1977.

For blue whiting, however, all the signs point to a further big jump in catch this year. And the most prominent of these signs are the new super ships, such as the *Torbas* and the *Libas*.



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Turn to page 30



## Seal support criticised

NORWEGIAN sealing skippers and sealing boat owners, in a joint letter to the Fisheries Director, express their "concern" that Crown Prince Harald is a patron of the World Wildlife Fund.

This organisation, they say, has urged that sealing should be halted or limited, "and this can only be interpreted as criticism of the Norwegian authorities' measures for protecting seal stocks."

According to the Norwegian Sealing Council, new scientific data confirm that more than 200,000 Greenland seals can be killed annually without risk to stocks. These stocks are increasing by between 310,000 and 360,000 a year, while the catch quota fixed for 1978 is 180,000.

## Georges Bank deadlock

POLITICAL considerations and the importance of Georges Bank in the Gulf of Maine have combined to stop talks between Canada and the United States over extended fisheries zone boundaries.

The halt came in mid-March as the two negotiators sent a joint report to their governments proposing an interim arrangement and authority to resume talks. But this will only be after the two governments have had time to consider the recommendations and to let some political pressures expire.

correspondent.  
In Canada, the federal government and the Nova Scotia government both face elections in the summer and the negotiators have suggested these should precede further talks.

The political future of at least one Canadian minister could depend on the outcome of the talks, and the Nova Scotia government might find re-election difficult.

The joint report urges the two governments to begin implementing the fisheries commissions' recommendations and to let some political pressures expire.

The bitter fight over the Panama Treaty in the United States has not made a healthy atmosphere for acceptance of boundary concessions to Canada, reports our

correspondent.  
drocarbon zones the negotiators proposed last autumn. They also propose solutions to some difficult fishery issues.

Neither side is prepared to move over a boundary line for Georges Bank. The negotiators could reach a solution which might be acceptable to the two central governments but not to the provincial governments in Canada or regional fisheries councils in the United States.

Four disputed boundaries exist between the two countries, arising from overlaps in the 200-mile limits proclaimed last year.

The joint report urges the two governments to begin implementing the fisheries commissions' recommendations and to let some political pressures expire.

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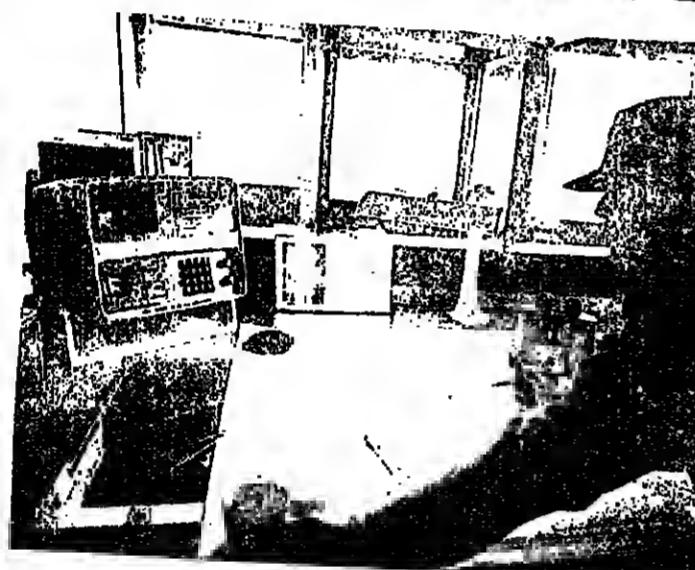
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It reaches and serves fishermen, fishing companies, processors and distributors in more than 160 countries and territories. It circulates among members of governments and international organisations, and among fishery administration and research workers.

Readers also include designers and builders of fishing craft, makers of fish finding instruments, catching gear and processing machinery, consultants, operators of fishery protection services, and the many other people engaged in an industry that is harvesting and handling 73.5 million tons of aquatic creatures and plants a year.

## FISHING LIMITS AND ISLAND STATES

THE DECISION of the South Pacific Forum (meeting in Port Moresby last year) to declare 200-mile economic zones by March 31 will make fishing much more complicated for foreign vessels working in the area. The Forum also decided to set up a South Pacific Regional Fisheries Agency (SPRFA) to co-ordinate licensing of foreign ships and surveillance of the zones.

Outside fishing nations will therefore have to negotiate access with small island countries who have gained strength through acting together.

## comment

Other countries not in the Forum, the territories of the United States, France and Britain, will be invited to join the Agency provided they "support the sovereign rights of the coastal state to conserve and manage living resources, including the highly migratory species, in its 200-mile zone."

The "migratory species" causes a complication because the United States does not recognise tuna as a resource belonging to states claiming the EEZ. This could affect the membership of American Samoa.

It might be argued that the island countries should consider compromising over tuna to make SPRFA membership complete and so ensure that this essential

cent of the catch was taken by the South Pacific countries. The rest went to the distant water fisheries in the region, with Japan getting about 60 per cent and with smaller shares to Taiwan, South Korea and the Soviet Union.

Islands are, of course, among the greatest beneficiaries of the now-accepted exclusive economic zone. But when island countries are small, their fisheries primitive, and the resource rich and tempting, they desperately need the protection of an umbrella agency such as SPRFA.

The decision to create it and the lessons that will come from its formative period, could also be an encouragement to other groups of island nations to consider similar arrangements.

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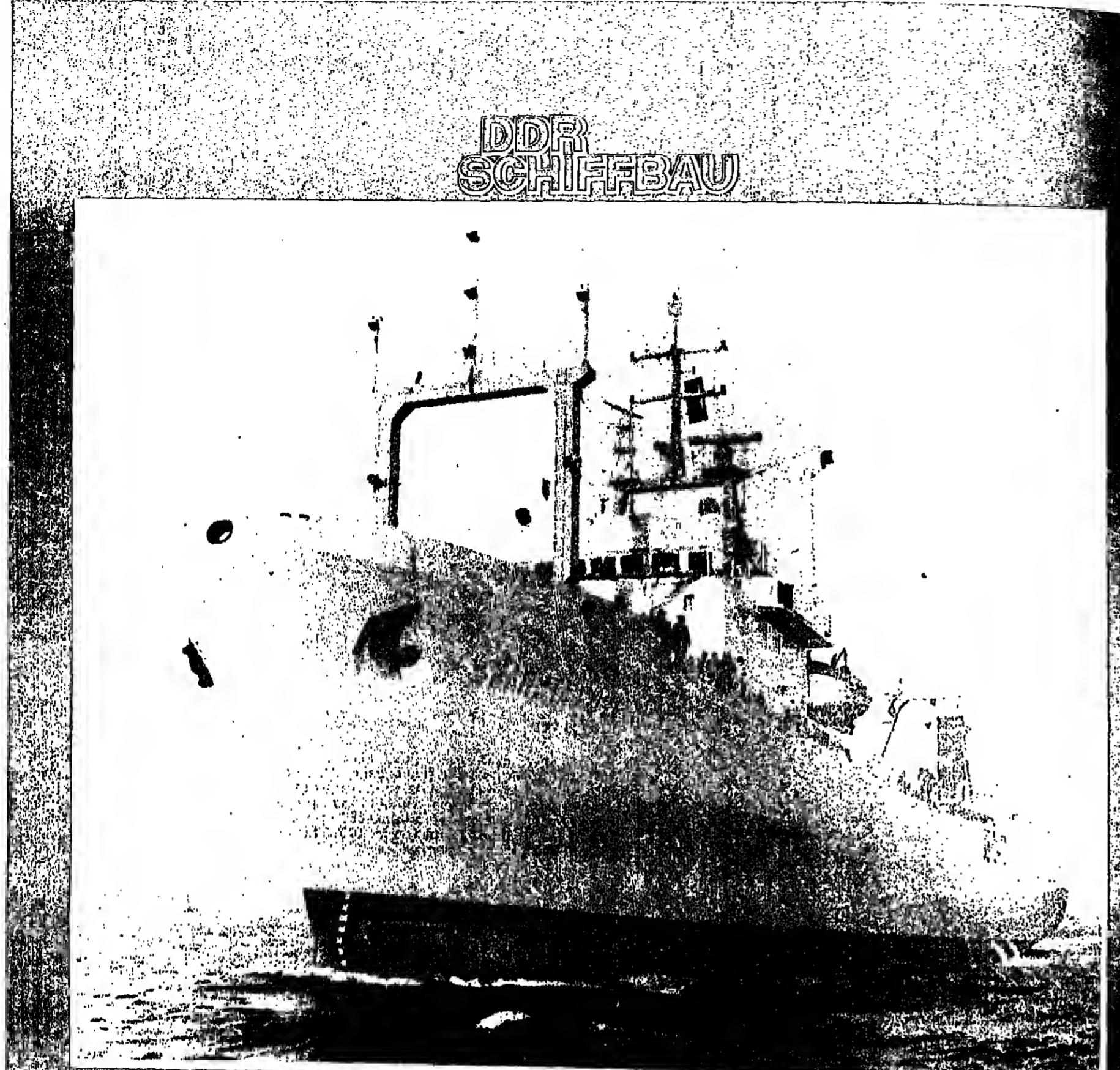
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#### Chile's tasty new export

THE JUREL is one of the latest additions to the list of fish exports from Chile. A species of jack mackerel, this fish is abundant along the central coast. It is now being frozen and shipped abroad.

Although regarded locally as good-tasting and relatively inexpensive, the jurel has been little exploited. But over the past five years declines in stocks of sardines and merluza (hake) stocks have helped divert attention to other species.

Most of the jurel caught has been going into the meal plants but a start is being made towards increased food use.

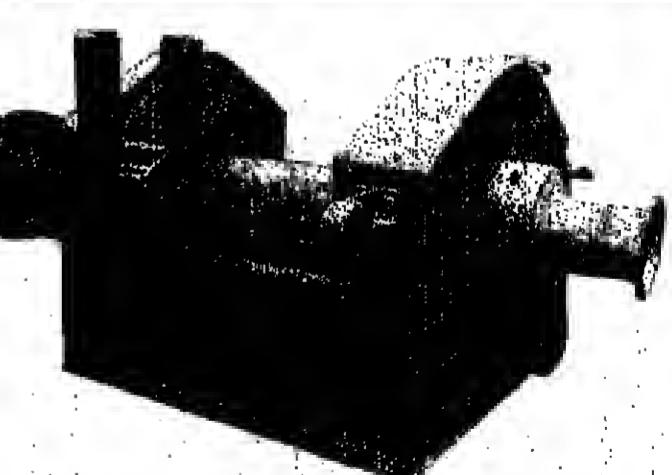
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# Can the salmon survive?

THREATS to the survival of the Atlantic salmon (*Salmo salar*) will come under close scrutiny at a big meeting to be held in Edinburgh, Scotland, later this year.

The future of the salmon becomes more precarious year by year, says the Atlantic Salmon Research Trust. Dangers to the fish include the increase in pollution, illegal netting and "continuing disregard of international agreements on salmon fishing regulations by many countries."

With the International Atlantic Salmon Foundation, therefore, it is co-sponsoring an International Symposium. They expect more than 250 people at this "important international" event, which will be on September 26, 27 and 28, and will have the University of Edinburgh as its venue.

This will be the second symposium on the subject; the first was in Canada in 1973.

The three days' sessions of the Edinburgh symposium will begin with a wide-ranging review of the condition of Atlantic salmon stocks in relation to threats to their survival.

Speakers at the sessions will include Sir Richard Levinge and international lawyers who are dealing with the United Nations Conference on the Law of the Sea.

#### Illegal fishing

Other subjects which will be discussed at the symposium will include the problems of combating illegal fishing, protection of the resource, and the constraints that are limiting the proper use of Atlantic stocks.

Fifteen invited speakers will present papers. They will give the views of the commercial fisherman and the angler; there will be a substantial section on ecology and another on salmon cultivation, including ocean ranching.

The programme has been arranged to give participants the opportunity for detailed discussions on all aspects of the future of the species.

Accommodation at reasonable rates will be available in the University halls of residence.

Information about this and about the Symposium can be obtained from W. Campbell, Symposium Secretariat, Centre for Industrial Consultancy and Liaison, University of Edinburgh, 16 George Square, Edinburgh EH8 9LD, Scotland.



#### They come big down on the farm...

One way of assuring future supplies of Atlantic salmon is to farm it, and this is being done on an increasing scale in several Atlantic countries.

In Norway, for example, the big Mowi project backed by Norsk Hydro produced 680 tons of salmon worth about £2 million in 1977. This was up from 640 tons the year before.

Mowi claims that its salmon competes in flavour with the hunted fish. Most of the farm's output is now sold iced and not frozen.

#### Largest venture

Although none of the farm projects in Scotland have yet reached the scale of Mowi, they are growing steadily in number and in size.

Probably the largest venture is that of the Unilever company Marine Harvest whose Lochinvar brand is being sold throughout Europe.

Here, Marine Harvest staff show two of the early 1978 crop, fine 17 lb fish, but small compared to some of the crop of salmon up to 27 lb.

## Norway expo—why it had to move

THE ORGANISERS of Nor-Fishing 1978 have hit back at critics in Norway of the decision to change the time and venue of this international fishery exhibition.

Nor-Fishing moves this year from its venue in Trondheim to The Sjølyst Centre in Oslo and it will take place in November.

The main reasons for the change are given as the need to maintain the international character of the exhibition and to ensure that it maintains its two-year frequency.

#### Alternative

"Oslo is the only real alternative if we are to keep our international status," explains Gunnar Skoggedal, chief executive of Norges Varemesse, the organising body. The exhibition had, he implied, grown too big for Trondheim.

In 1976 some exhibitors and visitors had to be lodged up to 60 miles from the site. All hotel rooms, boarding houses and hostel beds were taken.

On the site, temporary halls had to be put up at great cost.

Oslo had the halls and the accommodation but things could change in the future, and a committee had been appointed to look into the venue for 1978 Nor-Fishing.

According to Skoggedal, support so far from manufacturers has been very encouraging. By mid-March more than 200 firms had said they will be taking part in the exhibition.



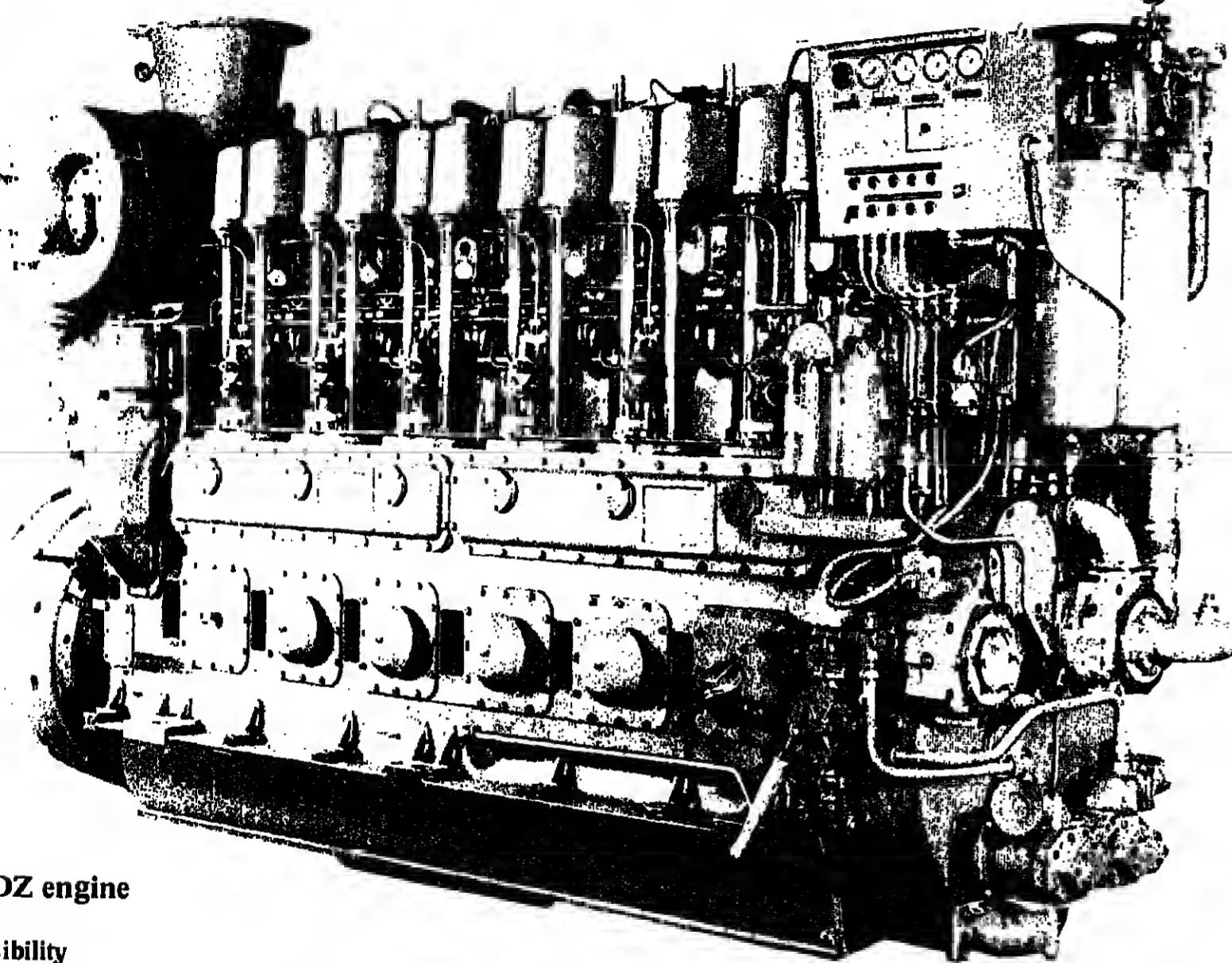
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## from the dockside

by PETER HJUL

THE Japanese are roaming far and searching wide to find fish that may still be available to help them replace the Alaska pollack they have lost in the North Pacific. As we pointed out last month, this fish (minto to the Russians and walleye pollack to the Americans) yielded a total catch in 1976 of just over five million tons. It is a gadoid related to the cod, the hake and the haddock.

Americans who had their market flooded by Japanese-exported frozen pollack a few years ago found the fish inferior to its cousins, in taste and keeping qualities. But that may have been due to the fact that the industry in Japan is more familiar with converting pollack into surimi.

This substance can be loosely described as a form of minced fish. But, as a Japanese participant told the FAO Products Conference in Tokyo in December 1973, it comes from a process more sophisticated than a whirl through a Brander or a Bibun flesh separator.

It is produced in several intricate stages. When these are done, the surimi is the raw material for fish sausages or the ingredient of various Japanese delicacies known as kamoboko.

At that same conference, I remember two splendid parties where the tables groaned with delectable versions of kamoboko.

Those, of course, were the heydays of Japan's pollack fishery, with great stern trawlers up to 5,000 tons working the high seas and supplementing the more traditional shore-based fisheries from Hokkaido and northern Honshu. In 1973, Japan had three million tons of a 4.6 m. ton catch. In 1976, the share was down to less than 2.5 m. tons.

### Forced out

By 1977, the Japanese had been forced out by Russian and American 200-mile limits from their best pollack areas. I have not yet heard the final figure, but it must have been well below two million tons; for the surimi industry and its thousands of fishermen and other workers this means disaster.

It was not unexpected, however, and the fishing giants such as Taiyo and Nippon Suisan began their search years ago. We report one result elsewhere in this issue. A Japanese consortium has done a deal with the Argentinian government for a test venture off Patagonia.

Hake is the main fish involved, but I hope the consortium has more success with it than one of the member companies, Taiyo, had with a related fish off Peru.

In 1974, in co-operation with the Peruvian state corporation EPSEP, Taiyo and two other Japanese companies formed a joint venture company known as Chalwai del Peru.

The project was intended to catch and process hake into sausages and other products for sale locally, and for surimi to be sent to Japan.

But it was found that the Peruvian merluza or hake is periodically afflicted by enzymic action that breaks down the muscle structure of the dead fish, particularly when the temperature is raised.

### Black spots

This is a complex problem experienced in several hake fisheries. It is associated with black spots in the flesh and may be partly attributable to some parasite. When I visited the North-west Center in Seattle of the National Marine Fisheries Service in October last year, it was being investigated by John Dassow and other workers.

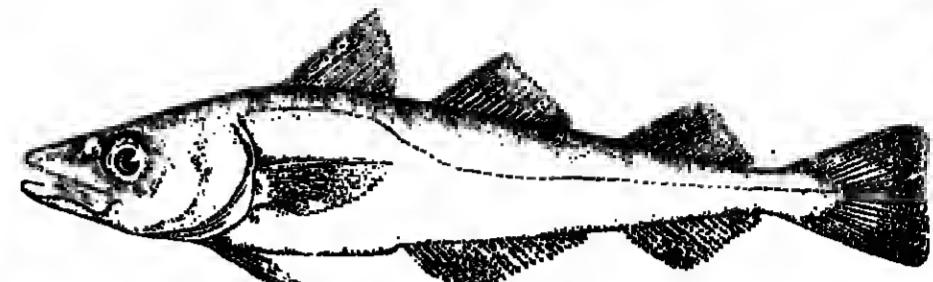
But Taiyo and its associates are not waiting. They are closing their Peru venture and withdrawing their investments from the country.

Hake is not the only fish being looked at. The blue whiting or poutoussau, a smaller gadoid, might also be a pollack substitute.

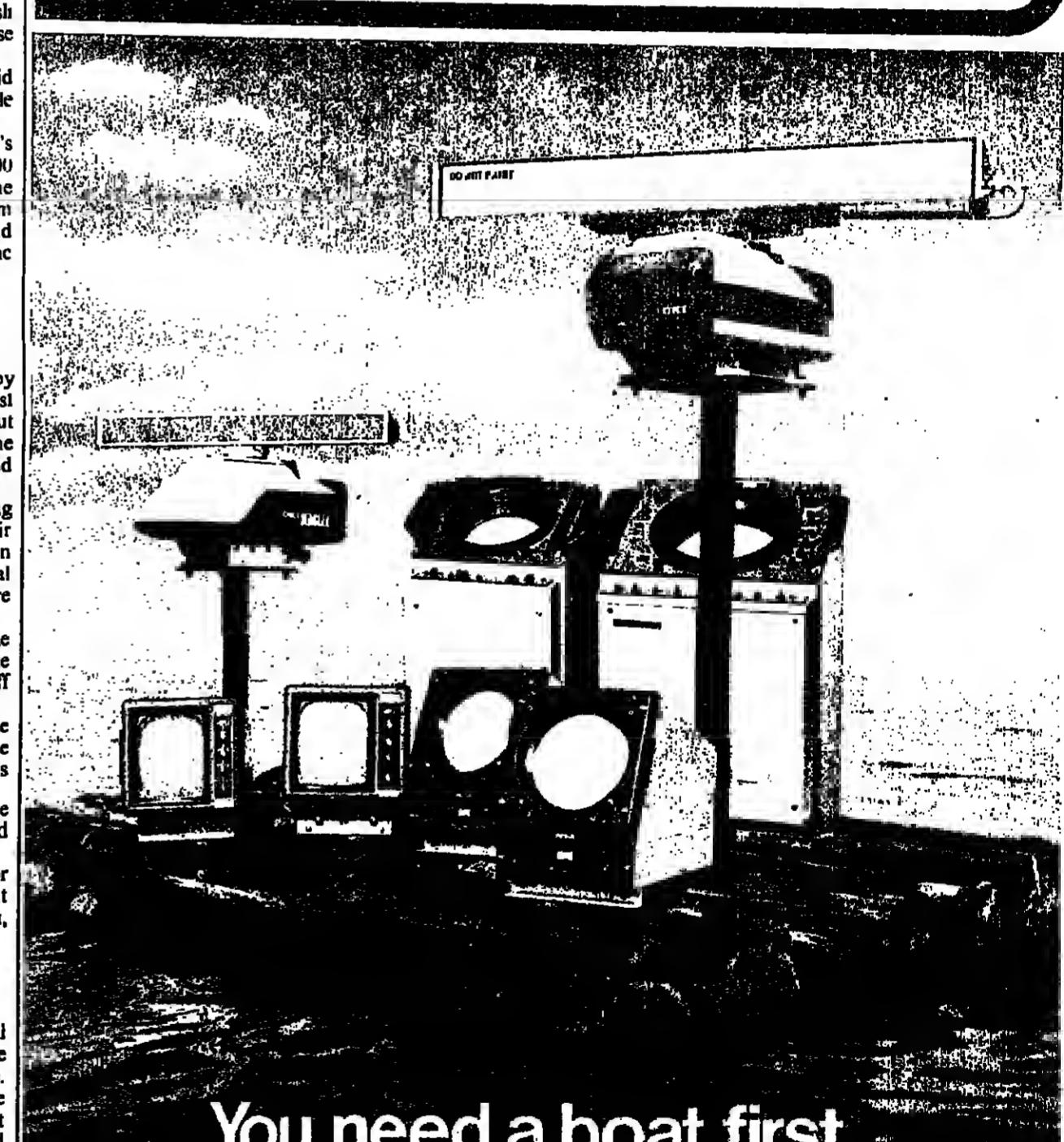
The British, the Norwegians and others have been trying to exploit the big stocks which concentrate west of the British Isles in the spring.

Next month, a factory on Shetland will give the Japanese a chance to turn the fish into surimi. A test machine is being installed and it will be tried out on part of the catch taken by the continuing experiment that has been long in progress.

Perhaps it may at last reveal a substantial food use for the million tons of blue whiting said to be catchable.



Related but so different! To offset the sharp drop in supplies of Alaska pollack for surimi, the Japanese are looking at other gadoids, such as the Pacific hake (lower picture). But they are finding the pollack is not easy to replace.



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HP-7700	3:1, 4:1	Caterpillar 3412TA Cummins VT1710M, KTA1150M Detroit Diesel 16V71
HP-28000	4½:1, 5:1, 6:1	Rolls Royce, DV8NM, DV8TM
HPV-9400 HPI-9400	1:1, 1½:1, 2:1, 3:1	Caterpillar D353TA Cummins VTA1710M, KT2300M Detroit Diesel 18V-92, 12V-149 Rolls Royce DV8TCWM Waukesha F2896-DM
HPV-10500 HPI-10500	4:1, 5:1, 6:1	

\*For Pleasure Craft Only    \*\*Anti-engine rotation output only.

**Direct Drive Reverse**

5HD-200	1:1 in-line	Cummins VT903, N855M, Scania D14, Caterpillar 3306, Volvo TMD-100A, Detroit Diesel 8V-71, Rolls Royce C6M265
HY-400	1:1 in-line	Detroit Diesel 8V92, 12V71, Scania DS1-14, Cummins VTA-903M, NTA 855M, KT1150M, Caterpillar 3408, Rolls Royce C8M410
HP-500	1:1 In-line	Detroit Diesel 12V71TI Caterpillar 3412TA      Cummins KTA1150M
HR-200	1:1 In-line	Caterpillar D398, D399 Waukesha F2896DSIM

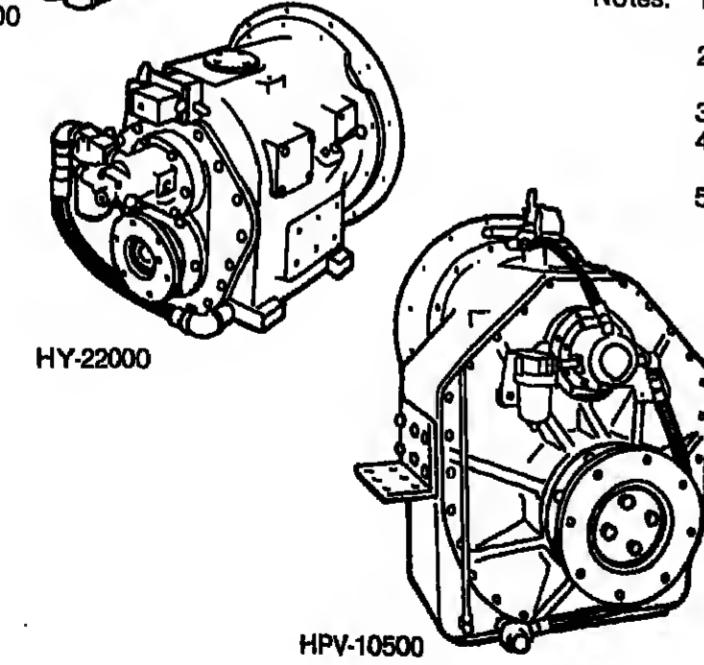
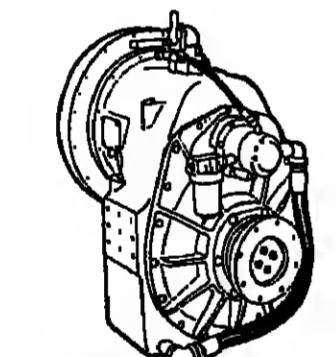
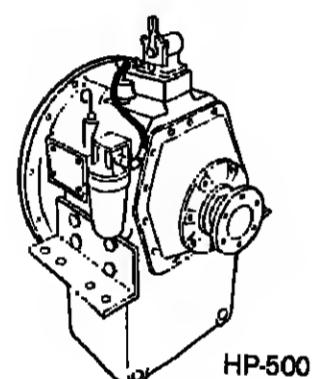
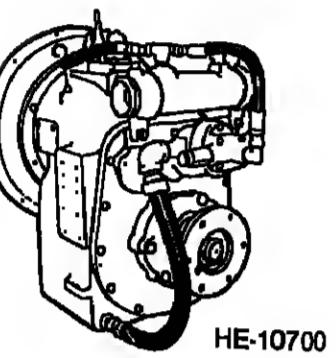
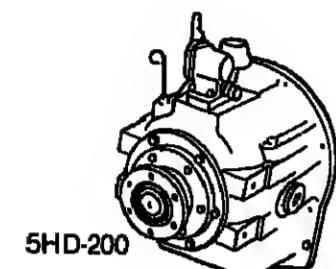
- Notes:
1. Consult factory or authorized distributor on specific applications. This chart is intended as a guide only.
  2. Anti-engine rotation output normal for reverse and reduction units. Available with idler for engine rotation output (except \*\*).
  3. In forward operation direct drives provide engine rotation output only.
  4. Adapters for all modern diesels in competitive torque capacities are available.
  5. All direct drive and reduction models can be furnished with one way clutches for power-take-off applications.

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HPV-10500

# EEC and Norway decide on this year's quotas

## Cut cod catch, Iceland warned

ICELAND has been warned by her head of fisheries research that cod stocks have now fallen to 1.2 million tons, from an estimated 2.6 million tons in 1955. Spawning stock is only about 180,000 tons, compared with one million tons in 1959.

Jon Jonsson is director of the Icelandic Ocean Research Institute in Reykjavik, and this institute is recommending that the 1978 catch should be limited to 270,000 tons 100,000 tons less than the catch by Icelandic fishermen in 1977.

Over the ten-year period 1967-76, the Icelandic cod catch averaged 250,000 tons. As FN reported in March, the 1977 catch was far above that recommended by the institute.

This year and in 1979, it should be cut so that spawning stock can build up, said Jon Jonsson. To make up for the loss, fishermen should be allowed to take more haddock, saithe, redfish and herrings.

The institute has proposed quotas of 40,000 tons for haddock, 60,000 tons saithe, 10,000 tons plaice, 60,000 tons redfish, 15,000 tons Greenland halibut, 35,000 tons herrings, and one million tons capelin.

Meanwhile, in Paris, the Organisation for European Economic Co-operation and Development (OECD) has said in a report on Iceland that fish stocks there have dropped to a critical level and further catch reductions are essential.

Cod stocks were particularly at risk. But, by cutting the haul now, it should be possible to increase catches to 400,000 tons a year by the end of the 1980s.

## Sinkings start safety row

RECENT SINKINGS of fishing boats off Norway have sparked off a long-simmering row over vessel safety and the responsibility for enforcing it.

The boats lost included the *Frite Erik* and the 75 ft. *Utrik Senior* which sank off Senja with the loss of her nine crew. This wooden boat was built in 1964.

To try to settle the dispute, the Association and other organisations were invited to meet the Directorate in Oslo at the end of March. The matter is also on the agenda for discussion at the Association's national conference this month.

According to a spokesman of the Fisheries College in Trondheim, many of Norway's 19,000 fishing vessels are old and fail to satisfy the rules for stability introduced ten years ago.

A QUOTA agreement for 1978 was signed last month by the European Economic Community and Norway in Brussels.

Under its terms, EEC fishermen will be allowed a total of 421,000 tons from the Norwegian economic zone and Norwegian fishermen 322,700 tons from the EEC zone.

In addition, EEC fishermen will be able to fish for blue whiting in the Norwegian zone without restriction. And Norwegian fishermen will be able to fish for blue whiting and porbeagle shark in EEC waters. The Norwegian catch of blue whiting in 1977 was 36,753 tons.

The 1978 agreement, said Norwegian Fisheries Director Knut Vartdal, does not prejudice the quotas to be fixed in subsequent years. The aim is still to establish a balance in quotas by 1982.

He saw the 1978 agreement as a step in this direction. EEC fishermen caught 547,000 tons in the Norwegian zone in 1976 and 529,000 tons in 1977. The 1978 quota is therefore a considerable reduction.

In the EEC zone, Norwegian fishermen caught 328,000 tons in 1976 and only 128,000 tons in 1977.

The 1978 agreement was delayed partly by the failure of the EEC countries to agree on the Common Fishery Policy, and partly because of EEC reservations over Norway's decision to establish a protection zone around the Svalbard islands.

## HAKE SURVEY DEAL SIGNED

A CONSORTIUM of five leading fishing companies in Japan has finally agreed with the Argentine government over a test fishing operation for hake in the waters off Patagonia. The contract was signed in February.

The five companies are Nippon Suisan Taiyo, Nichiro, Kyokuyo and Hoku.

Two Abulton stern trawlers are being sent by the consortium to inaugurate the venture. The target is a catch of 100,000 tons.

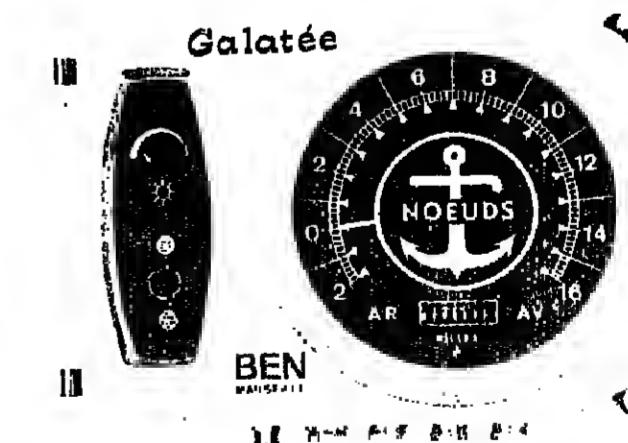
If the test succeeds, the Argentine government will establish a hake fishing company together with the Japanese members of the consortium.



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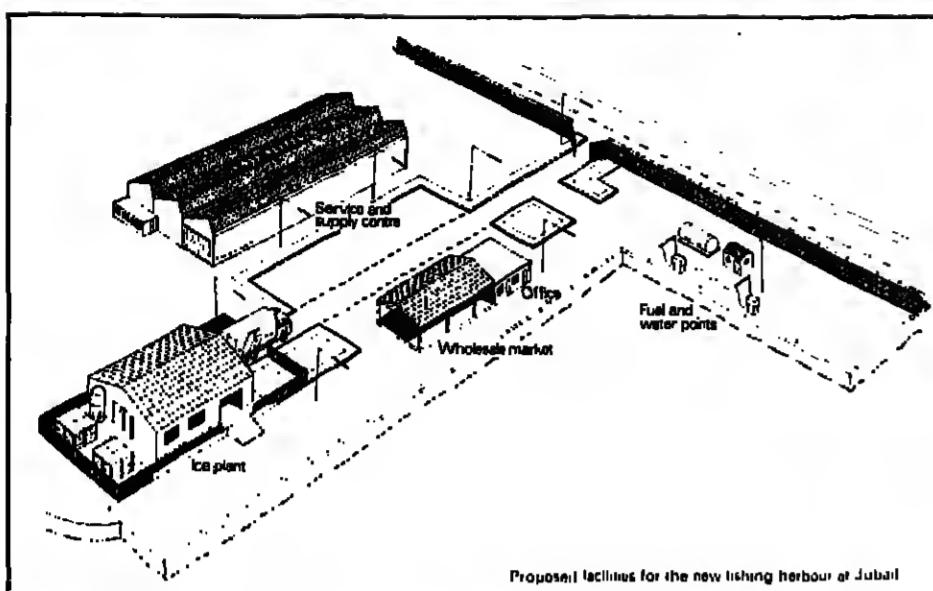
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# SAUDI ARABIA PORT PLANS



The WFA plan for the layout of a proposed new harbour at Jubail, on the Persian Gulf coast of Saudi Arabia.



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AS PART of the four-year research and development project it is carrying out for the government of Saudi Arabia, the British White Fish Authority has been looking at fishing harbours and supply centres, and has introduced the research vessel *Ibn Majed*.

Harbour and shore facilities for fishermen on both the Gulf and Red Sea coasts of Saudi Arabia are "minimal and would not be able to support a modern fishery," says the WFA in its report on work in 1977, the second year of the project.

Centres which will play an important part in the future Saudi fishing industry include Jubail, Tarrut Island, Jeddah, Gizan and Tuwal.

At Jubail on the Gulf coast, the Port Authority is building a new fishing port. It will have a 300-metre long quay and 60,000 sq. m. of land for discharging and servicing the boats.

But the project does not provide for other needs such as fueling and freshwater berths, repair and maintenance shops, slipway, a market, ice plant and administration offices.

The WFA has, therefore, drawn up a plan (see drawing) incorporating these facilities.

At Gizan, the most active Saudi fishing port on the Red Sea, there are plans for a new market. The WFA now believes it could also be developed into a modern harbour through reclaiming land on the foreshore and providing a proper fish landing area.

Jeddah's need is for an improved market. At Tuwal (a Red Sea fishing village) fishermen have to wade out to their boats. The WFA has recommended that it be developed as a fishing centre by providing a simple concrete jetty 50 metres long by 7 m. wide.

#### Research ship

In the year since she has been in service, the *Ibn Majed* has carried out several survey and exploratory fishing projects. These include work leading to the discovery of new grounds in the southern Red Sea and testing longline fishing.

The *Ibn Majed* (formerly

named the *Akbarfa*, see FN February 1977) was one of six vessels ordered from the Astilleros Zamacona yard in Bilbao, Spain, for deep-sea shrimping off Angola.

She was adapted for her new role on the stocks in Spain and later in Britain where the WFA developed the ship into what it has described in the report "as one of the most advanced vessels of its type".

She is also a remarkable bargain for the £7 million Saudi Arabian project. Instead of ship built from the keel up at a cost of £1.5 to £2 million and delivered in two years, the project got the ship it needed in less than a year for £800,000.

She is, says the WFA, "superbly equipped and extremely versatile. Not only can she undertake bottom trawling, mid-water trawling and purse seining, but other methods such as gill netting, longlining and trap fishing."

The *Ibn Majed* is 31.5 metres long overall with a moulded breadth of 8.3 m. The fish hold has a capacity of 40 cu. m. The ship is powered by a Caterpillar D39B engine of 850 hp.



Tests of a new-design small boat (see Page 36) and the development of resources and harbours will lead to the replacement of old traditional craft such as this Gulf fishing dhow.

## TAMIL NADU GOES SHRIMPING

THE Tamil Nadu Fisheries Development Corporation is to move into India's shrimp export trade soon under its own brand name. The state's Minister of Food, Mr. G. R. Edmund, said the Corporation had just acquired two 23-metre long shrimp trawlers built by the Inessa yard in Mexico. They had cost Rs 8 million (about \$210,000). If they succeeded, other similar boats would be bought.

Each voyage of the trawlers will last about ten days and they'll make about 20 trips a year.

According to Mr. Edmund, the Tamil Nadu government is also considering proposals for the replacement of many of the state's 42,000 traditional fishing boats with GRP-hull boats powered by outboard motors.

These engines are not manufactured in India and so they will be imported from Japan at prices from Rs 4,000 to Rs 6,000 each. It is planned to start with 200 engines, and then to bring in about 400 a year.

## Malta seeks trawlers from Arabs

THE GOVERNMENT of Malta has ambitious plans for the island's tiny fishing industry, and it is to be developed with the help of several Arab countries. Libya is taking part in a joint venture through a co-operative called Stad u Stana (Fish and Get Rich).

This was announced by Prime Minister Dom Mintoff, but few other details have been given out except that some ten small trawlers will be operated and these are to be built in Malta.

In the Maltese budget for 1978/79 revealed last month, about £M1.76 (2 million sterling) has been allocated for agriculture and fisheries. Of this, £570,000 will be used to acquire trawlers and to train crews to work them.

Another six trawlers are expected from Kuwait and Saudi Arabia.

In recent years, the number of fishermen in Malta has increased from around 750 to nearly 1,000.

But the bright picture of development and fishing progress painted by Fisheries Minister D. Cremona is contradicted by the Opposition in the Maltese Parliament.

Speaking during the budget debate L. Gatt, shadow Minister for Fisheries, criticised the state of the island's fishing harbours, and the way fishermen were being assisted.

He said that catches in 1977 had fallen by 5.6 per cent. He was also critical about the plan to use trawlers on the limited resources around Malta.

FAO, he pointed out, had indicated after its survey that two trawlers would be enough to supply Malta's needs.

## Cuba develops fish exports

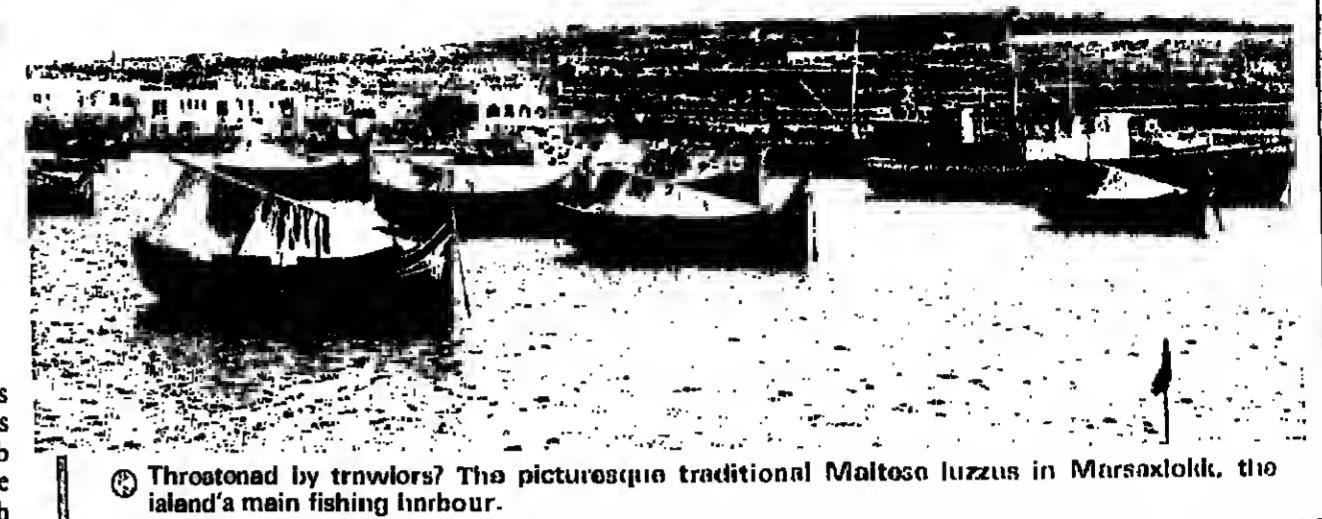
IN AN effort to diversify her exports, Cuba has been developing the production of the fishing industry.

Twenty years ago fishery exports earned Cuba the equivalent of US\$4.5 million; in 1977 earnings had jumped to \$84 million, and production is expected to rise by about 35 per cent in 1978 as a number of new ships come into operation.

Yearly landings have reached about 200,000 tons. Domestic consumption during 1977 was estimated at 12.3 kilos a head.

Exports are mainly of high-value species such as spiny lobsters and shrimp.

Fish oil production will increase as ships, such as the super-trawlers built in Spain (see FN, March 1978), come into full operation in distant waters.



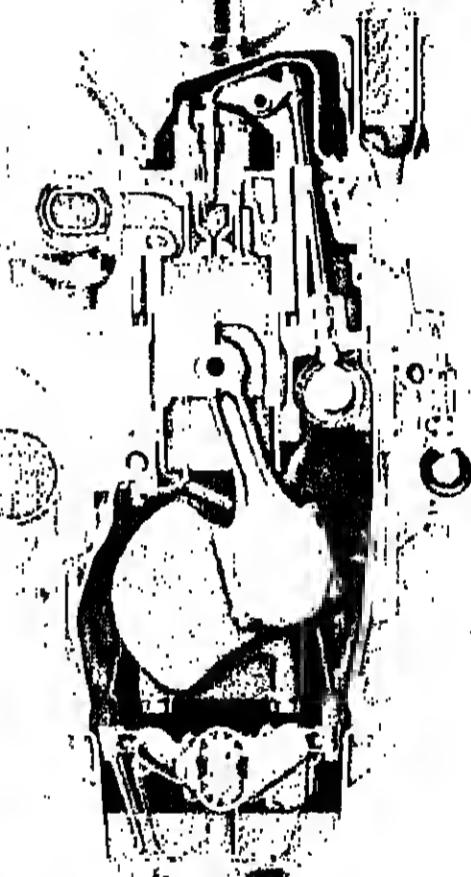
© Threatened by trawlers? The picturesque traditional Maltese luzzus in Marsaxlokk, the island's main fishing harbour.

## Look into Cat Power

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Cross-section shows simple design of the compact inline-6 Cat 3406 TA — rated 205 kW at 1800 rev/min.

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# NORDSEE LOOKS TO CANADA

## Newfoundland offer by German giant

**THE OFFER** by West Germany's big Nordsee trawling and fish processing company for a controlling share in a Newfoundland fish factory sparked off a lively argument in the Canadian province. Federal government officials are also watching the progress of the application, reports our correspondent.

Bremen-based Nordsee is a company in the giant Unilever group. Another company in the group, Britain's Birds Eye Foods, invested in a Canadian east coast venture some years ago, but later pulled out.

The offer is for a 51 per cent interest in Oceans

One of six ships built for the Nordsee fleet in the early 1970s; this 82 metre long factory trawler can handle more than 100 tons of fish a day.



## Spain pleads hardship in cod quest

**SPAIN**, one of the countries hardest hit by Canada's 200-mile fisheries zone, has been negotiating for an increase in its cod quota. Canada appears to be ready to accommodate the Spaniards but wants increased access to Spanish markets for her fish products.

The Minister has said that there are no new licences for fishing vessels available, and that Canadian ships will have priority over foreign ones. He also fears that moves such as that by Nordsee might be covert attempts by foreign fishing countries to re-enter the Canadian 200-mile zone by the back door.

Another more outspoken opponent is the fishermen's union in the province. Union leader Richard Cashin denounced the bid in a special half-hour television broadcast.

In 1974, Spain had a total quota of 204,500 metric tons in the ICNAF area off Canada. By 1976, the quota had been cut to 14,600 tons for the same area.

Spain has pleaded hardship, a claim Canada recognises because of the importance of cod in the Spanish diet. Officials say that Spain has made the situation difficult for herself by showing little interest in catching less popular species, a transition made readily by the Soviet Union.

A Canadian official says the government might grant a quota increase of 2,000 to 3,000 tons but it would be closely tied to additional markets for fisheries products in Spain.

Earlier, the Spanish hinted they might violate international guidelines and fish for as much Northwest Atlantic cod as could be caught outside Canada's zone. This move would infuriate Canada which says that fishing outside the zone must parallel levels on the inside to prevent a disruption of stock regrowth.

But the Spanish have dropped their overfishing threat, officials say, in light of Canada's preparedness to discuss a quota increase.

The Spanish quota was heavily cut because much of their cod fishing had traditionally been in areas on the Grand Banks and north of Newfoundland where the stocks had been most heavily depleted by overfishing.

Spain, a traditional big fish consumer, has also had her fishing options severely reduced in the European Economic Community fisheries zone as well as in areas off Africa.

Now they may return, under controls, as the result of an agreement which will licence them for operations inside the Mauritanian 200-mile limit.

This catch is 25 per cent higher than the two previous best years of 1976 and 1975. Of the total, 265,000 tons were processed as frozen fish and fillets for export, which resulted in a net 150,000 tons.

## Licence warning to boat buyers

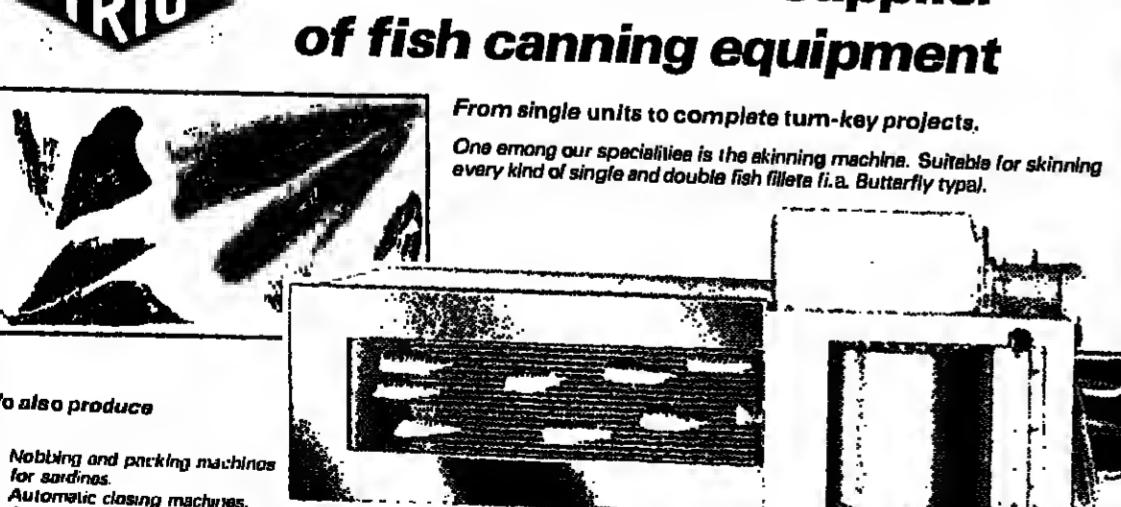
CANADA'S Minister of Fisheries Romeo LeBlanc has warned prospective buyers of boats to check first whether the purchase goes with a licence to fish.

"Buyers should not assume that fishing licences will be automatically re-issued," he said. "When a vessel is sold its licence becomes invalid and an application for a new licence must be made by the new owner."

The policy of the Federal Fisheries Department was to encourage the ownership of fishing craft by individuals or fish catching enterprises rather than by processing companies. "In view of this, any attempt by a company to increase the size of its existing fleet would certainly be resisted."

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## New deal means trawlers may return

SPANISH trawlers have also been barred from a once-traditional fishing area — off Mauritania. During 1977 several vessels were arrested for fishing there illegally.

Now they may return, under controls, as the result of an agreement which will licence them for operations inside the Mauritanian 200-mile limit.

The agreement also provides that Banco Exterior de Espana, will lend Mauritania the US\$20 million for the purchase of ships and other equipment from Spain.

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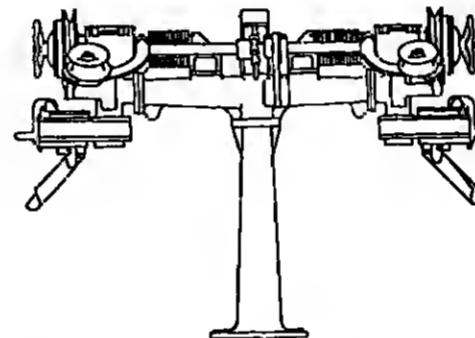
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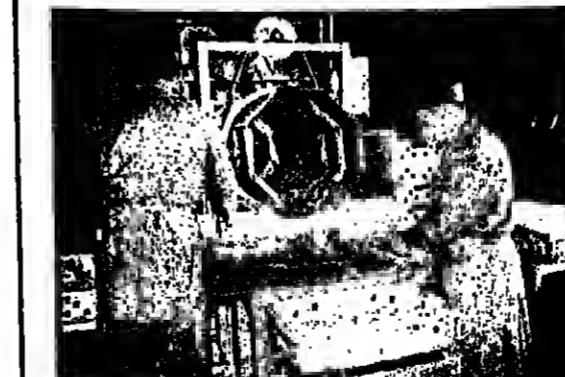
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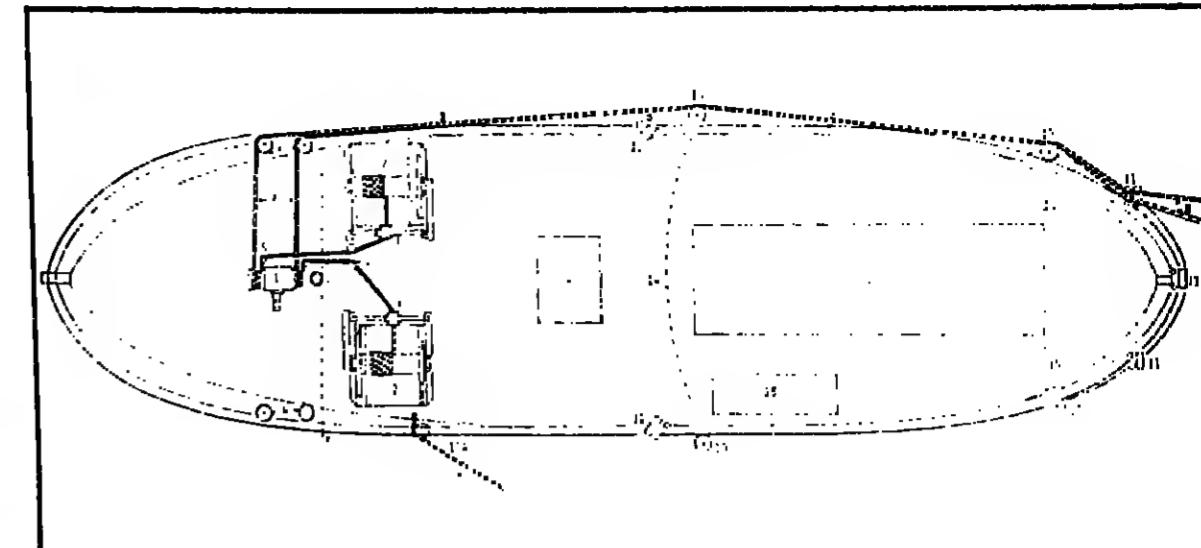
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Deck layout of the *Nivea* after she had been fitted out for Scottish seining. 1. Saine winch 2. Rope drums 3. Spooling gear 4. Guide blocks 5. Guide rollers 6. Mast 7. After edge of raised forecastle 8. Saine rope running aft 9. Hatch 10. Vertical guide roller 10e. Vertical guide rollers for setting of rope 11. Heeling in rollers for seine rope 12. Aft superstructure 13. Auxiliary engine 14 and 15. Forward and aft edges of superstructure.

The *Nivea* has a crew of five and is a wooden hull vessel 23.4 metres long. She is powered by a 400 hp engine.



## Norwegian boat tries out Scottish seine netting

A SERIES of tests by the Institute of Fisheries Technology Research could lead the adoption of the Scottish method of seine netting by Norwegian fishermen working the open seas.

Up to now, the seine netting technique for taking high quality catches of demersal fish has been used by the Norwegians only in shallow-water inshore areas around the Lofoten Islands and off Finnmark. But they have been impressed by the success of Scottish seine net boats working in deeper waters off Norway.

The institute says that the Norwegian sector of the North Sea is particularly suitable for seine netting. Until tighter controls following the introduction of the 200-mile limit, more than 200 Scottish seine netters are said to have operated in this sector.

**Auxiliary  
engine**

Reporting recently in the official journal *Fisketeknologi*, the institute says that, while North Sea prospects for deepwater seining appear to be good, possibilities to the Baffin Sea are "still an open question."

Technically, it was possible to fish with seine netting depths down to about 200 fathoms when the bottom was even and not too stony or soft. But further work is needed to adapt equipment for such depths.

Tests showed that, by using

drums for storing the seine rope (a method widely adopted by Scottish owners), it was possible to drift with much longer rope lengths than in the inshore seining. This, says the institute, opens possibilities for seining at greater depths and further out to sea than has been usual in Norway.

### Less wear on ropes

Because they avoid kinking, the drums also reduce wear on the ropes.

Through experience during the tests, the Scottish-style rigging was modified so that the ropes are guided overboard while setting to leave an open, and safe, working deck.

Deck machinery is controlled from the wheelhouse, leaving the crew free to concentrate on fish handling.

Small haddock made up much of the North Sea catch and gutting proved to be a huge task until a suitable machine was installed.

After extensive development work, Myren now presents the BRP 1, the first pump which is really tough enough for this job.

**COMPACT DESIGN:**  
The BRP 1 is available in two sizes, BRP 14, weight 400 kg, and BRP 15, weight 500 kg.

Both are of the same compact design and require very little space. For fishing boat installation this compactness is a must.

**SIMPLE MAINTENANCE:**

The pump combines two working principles, viz. rotary piston and vane pump. All parts exposed to wear are simple and inexpensive and can be replaced without full stripping.

**LARGE CAPACITY:**  
The BRP-pump has a large capacity to volume ratio, with maximum capacities of 100 tons per hour for the largest one.

In- and outlet ports are large. The big displacement volume per closing operation together with the completely pulse-free delivery prevent the raw material from damage.

**OUTSTANDING RELIABILITY:**

The unique and patented design of the BRP 1 pump ensures a high degree of reliability. The rotor vanes are guided by a spring loaded element. This feature prevents blocking of the rotor by foreign matter.

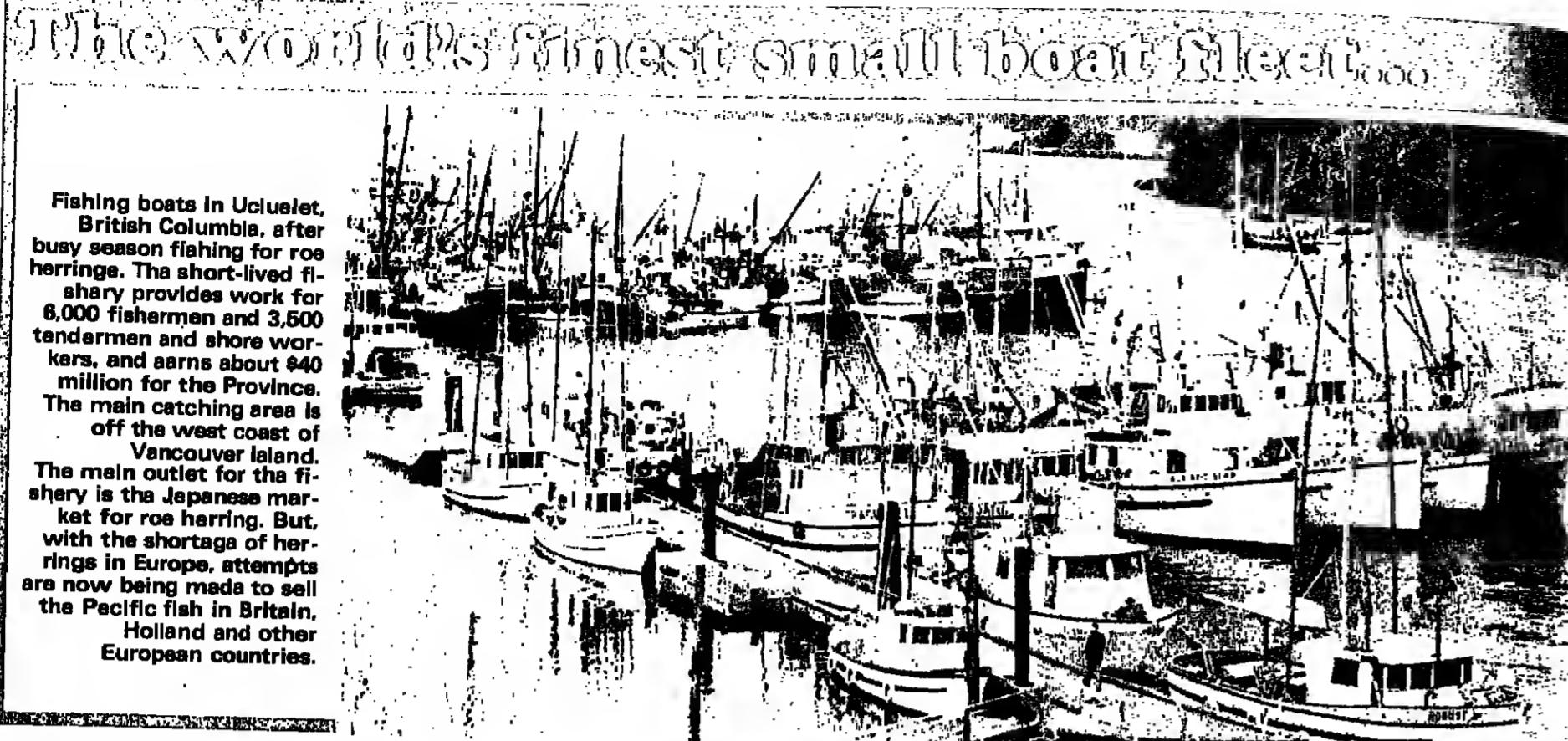
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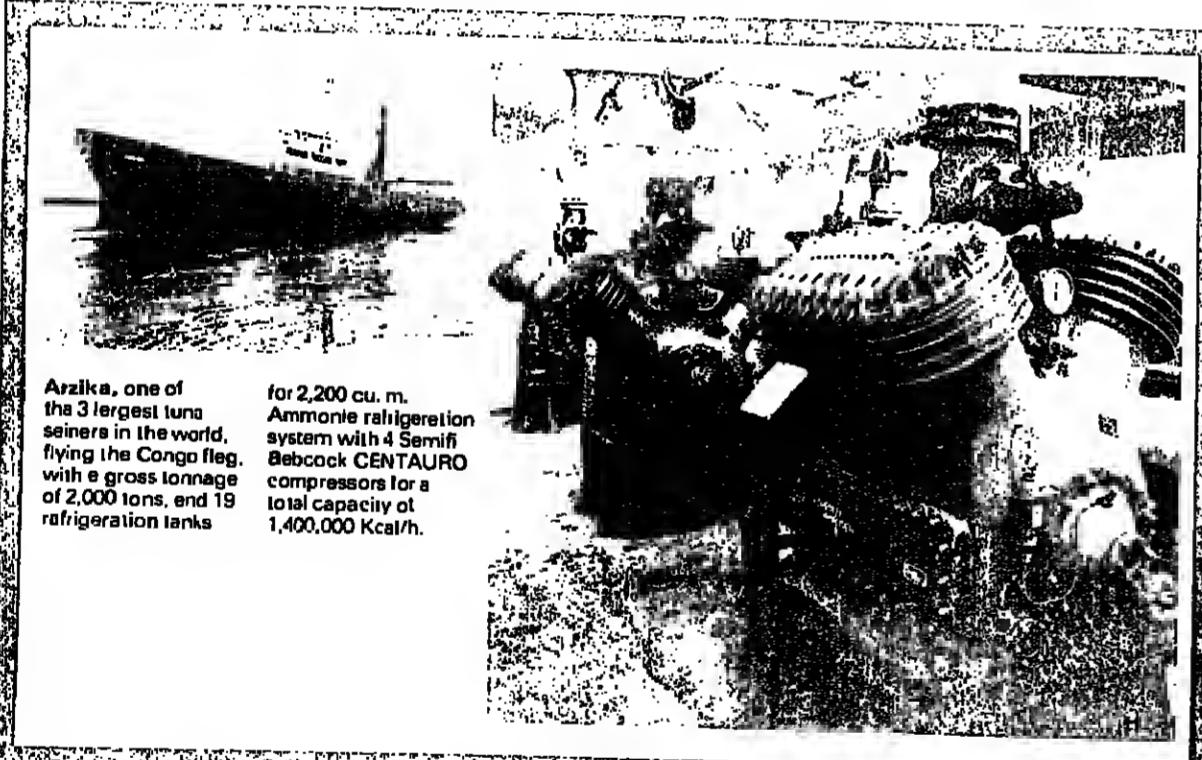
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Norway



Fishing boats in Ucluelet, British Columbia, after busy season fishing for roe herring. The short-lived fishery provides work for 6,000 fishermen and 3,500 tendermen and shore workers, and earns about \$40 million for the Province. The main catching area is off the west coast of Vancouver Island. The main outlet for the fishery is the Japanese market for roe herring. But, with the shortage of herrings in Europe, attempts are now being made to sell the Pacific fish in Britain, Holland and other European countries.

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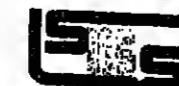
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## A HECTIC MONTH FOR THE ROE FISHERY

IMPORTANT as salmon are to the British Columbia industry, the focus in March was on another species.

The 1978 roe-herring fishery, which began its short run on March 1, provides break work for 6,000 fishermen and 3,500 tendermen and shore workers. It earns about \$40 million.

It began in 1970 when a market was opened for the roe in Japan. The permitted catch then was 11,000 tons, following a conservation close-down of Pacific herring fishing.

This year, the quota is 82,000 tons, with 49,000 tons going to the purse seiners and 30,000 tons to the gillnetters. The main catching area is off the west coast of Vancouver Island.

Fish for the roe market must be taken immediately before spawning so that the catch period is extremely brief and intense, sometimes a matter of only 15 minutes in a given locality. Purse seiners generally deliver their own catches to the processing plants but gillnetters offload to fish packers.

Because of the intensity of

the fishing, some seiners, in the past, have tended to overload.

Others have ventured out into gales at night to deliver their catches. Fatalities have resulted.

Herring caught in northern waters goes to Prince Rupert for processing. West coast and Strait of Georgia fish are brought to Vancouver or Ucluelet or Victoria. After the fish are hardened in brine, the roe is extracted by hand to minimise breakage of roe. The carcasses are reduced for use as livestock feed supplements.

During the 1960s, the herring stocks on the British Columbia coast were badly depleted and herring fishing was banned. Before then, almost all the herring caught was sent to reduction plants.

The Pacific Herring

Committee has estimated that 400,000 tons of mature herring spawn each year and that 200,000 tons could be harvested without diminishing the stock. But a catch of between 80,000-85,000 tons now is allowed for the roe fishery in order to make sure the present level of catching can be maintained.

Because of this impending overabundance, the federal government is expected to cancel licences for about 650 boats by the early 1980s.

There are the boats which, ten years ago, were issued B licences. At that time they were earning less than \$1,250 a year and were considered to be part-time.

Most regular fishermen would like to see the part-timers and the summer vacation fishers (many of them school teachers already earning \$25,000 a year) phased out. But there are problems. Some old-age pensioners rely on the money earned in

summer month fishing.

While the Class B boats are being phased out, the Federal Fisheries Department is moving ahead on its \$150 million five-year salmon enhancement programme. This is attempting to restore the salmon runs to what they were in peak periods years ago. It includes some new techniques which are expected to assist the catching fleet.

For the salmon fisherman, the enhancement programme is a necessity; and, in the end, he will pay for it through licensing charges. He must be a good businessman, as well as a top-rated fisherman, to remain in the business.

Interviewed by the Vancouver Sun, Byron Wright, president of BC Fishing Vessel Owners Association, said: "To buy a new purse seiner equipped and licensed only for salmon fishing, the minimum investment is \$325,000, including \$25,000 for a net and \$60,000 for a salmon licence."

"If he is extremely good, the owner should be able to sell his year's catch of salmon for about \$10,000. But the average is more like \$70,000."

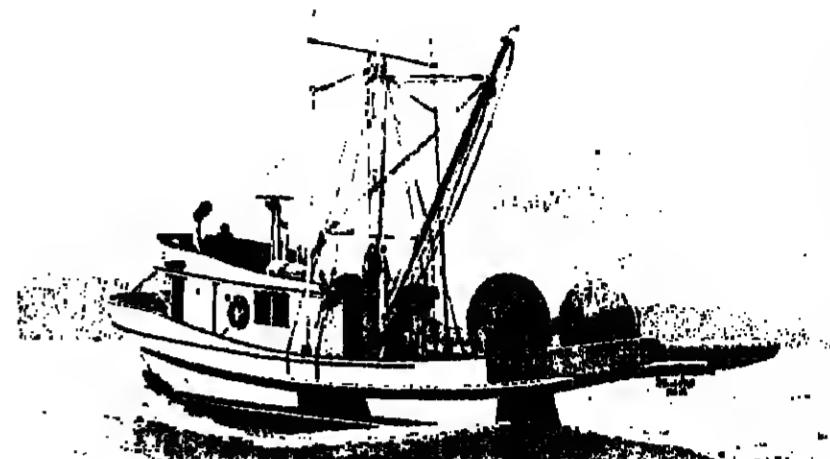
"Half of the take immediately goes to the crew, leaving about \$65,000. Next comes the amortisation of the loan needed to buy the boat; \$32,500 goes to the principal and \$40,000 to interest charges."

Following that, he must pay \$6,500 a year for insurance, \$5,000 a year for new technology and equipment replacement, \$5,000 for repairs to the net, \$5,000 for boat and engine maintenance, \$3,000 for fuel, and he should leave \$2,000 in the katty as a reserve for major overhauls. By the end he is already more than \$30,000 behind."

The only way the vessel owner can survive is to work like a madman, count on luck, and get into the lucrative roe herring fishery to increase his income."

# British Columbia has \$300m year

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salmon  
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## Green light for two new firms

THE registration of two new companies in the fishing industry was approved recently by the Philippines Board of Investments. Queen's Fishing Corporation, a 38 million peso (£3 million) project, will operate mainly for tuna around Luzon, Mindoro and Palawan islands, in the Moro Gulf and in the Sulu and Celebes Sea.

The other firm, Marine Pioneers Inc., is a Filipino-Japanese joint venture for the manufacture of nets.

# POWER PLAN

## 300 Sudanese fishermen to get motorised boats

THE STATE Fisheries Administration in Sudan and Britain's Ministry of Overseas Development are carrying out a joint project at a cost of about £1 million to increase the use of the country's Red Sea coast marine resources.

This project began in 1974 with a pilot scheme in which six small boats powered by 20 hp engines and fitted with ice boxes were rented out by the Administration to villages of Dongoab and Mohamed Qol. But this hit snags when repairs began to far exceed incomes from rental. The boats were then sold to their users for £100 cash in advance and £1,600 payable over three years.

The Administration has since been providing back-up services at cost, collecting fish caught in the inlets along the coast and transporting it to Port Sudan.

Outlay on this project so far has been £29,000 on workshops, stores, administrative offices and boat building. Revenue from fish sold at the government-controlled price amounted to £6,000 in 1976.

Studies are now being made of how to improve viability by better fishing methods, and £70,000 has been allocated by ODM for this.

One method to be tried is fishing with bright lights to attract the fish. More emphasis is also being placed on bottom fishing.

Shrimps are being surveyed in the Tokar delta of over 800 sq. km. where they occur in considerable amounts. A shrimp fishery there might lead to an industry with yearly export earnings worth £10 million.

At present, there are some 300 Sudanese fishermen operating off the Red Sea coast using 80 boats, including canoes. It is hoped to include all

these fishermen in the drive to greater efficiency by making them owners of motorised vessels. Payment for these would be instalments.

The ODM is supplying 60 diesel engines for the larger boats, and 50 petrol driven outboard motors. The Fisheries Administration will have 40 new boats built.

A sum of £230,000 will be spent on improving marketing. Hardware to be purchased will include three mobile cold stores each with a capacity of five tons of fish on ice, a quick freezer, and three 1,000-gallon water bowsers.

As far back as 1905, there was interest in Dongonab Bay, 180 km. north of Port Sudan, as source area for black lip pearl oysters. Oyster farming was intensified in the late 1950s and early 1960s.

In 1968 there were further developments, including an agreement with the Japanese company Asahi Pealax for large-scale oyster cultivation. But a year later the oyster beds suffered a mass mortality. The disaster occurred again in 1973 and 1975, and investigations are still going on to find the cause and the cure.

# BIG LOAN FOR SECOND BURMA PROJECT

THE Asian Development Bank is providing a loan of US\$26 million towards Burma's \$68.3 million Second Fisheries Development Project. The remainder, in local money, will come from the Burmese government.

Main aims of the project are to boost fish production along the Tenasserim coast and to further develop inland fisheries and aquaculture in central Burma and the Rangoon area.

At full development, the project is expected to add about 23,000 metric tons of fish to Burma's production (50,000 tons in 1976). Exports of high-priced species will generate about \$17.5 m. in foreign exchange.

The project should also substantially improve the incomes of nearly 900 small boat operators through mechanisation. It should also create nearly 4,000 jobs for skilled and unskilled workers who will be employed by the People's Pearl and Fishery Corporation (PPFC).

### Local demand

To be implemented over a five-year period the project is aimed at meeting the growing local demand for fish, particularly in the protein-deficient areas of central and upper Burma.

This is the Bank's second loan to Burma for fisheries. The first, of \$9.8 m., was approved in September 1974.

Fish is an important source of protein in the Burmese diet and represents an average of 30 per cent. of expenditure on food. To supply the needs Burma has an estimated potential production of one million tons a year from marine fisheries alone.

The project will require 94 small trawlers (in 10-ton class), six 15-ton and six 60-ton purse seiner/trawlers, and two 250-ton stern trawlers. Other vessels will include ten small collecting boats, two 300-ton refrigerated carriers, and two 200-ton supervision boats.

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# British trawler to join Brunei fish hunt

A SMALL British steel-hull trawler, which spent part of last year 200 ft. underwater after sinking off the south-west coast of England, is to start a new career as research vessel in South-east Asia.

The boat, the 50 ft. (15.24 metre) *Girl Rona*, has been acquired by the White Fish Authority. She will be the main component of a fisheries research and training project to be carried out by the Brunei Fisheries Department.

A British master fisherman, Skipper Mervin Hough, will accompany the vessel.

When she is delivered to her new owners in the middle of this year, the 280 hp *Girl Rona* will carry a variety of modern catching gear and deck machinery. She will be manned in her training and research role by a skipper, a scientist and four crew. Total cost of boat and equipment will be about £160,000.

"This contract marks an important step forward in Brunei's efforts to establish an offshore marine fishery," said Director of Fisheries Dick Beales.

It will be the first major fisheries project by the Department since it was created in 1966.



The 50 ft. "Girl Rona" prior to her sinking. She is now being refitted by the WFA for her new role in Brunei.

### New career for a vessel raised from the seabed

A food marketing study in 1975/76 estimated Brunei's fish demand in 1984 at 8,000 tons a year rising to 12,000 tons.

But the local catch has been declining. To reverse this, funds were made available for development.

Skipper Hongli is an experienced ex-Hull trawler skipper. He also has several years of experience of working on projects in Brazil, Mauritius and Saudi Arabia.

In addition to operating the vessel and training crews, he will provide advice to artisanal fishermen and to potential investors in larger boats for trawling.

Commenting on the WFA's involvement in Brunei, Beales said: "My impression of the WFA is that it is an extremely professional and practical organisation. In small developing countries one needs a practical approach that is applied to immediate problems, and this is why we opted for the WFA to help us with our problems."

Over the next few years, the WFA hopes to provide further experts to assist in Brunei's fisheries development programme. Some of the specialist studies which might come into this category are the use of WFA portable trials equipment for measuring trawl gear performance, instrumented mid-water trawling experiments, and handling and storage of fish and fish products.

IN A report presented to a conference in Ho Chi Minh City in southern Vietnam, the Ministry of Marine Products revealed that in 1976 the southern provinces had a fish production of 512,000 tons. The 1977 plan was for a small increase but it was fulfilled by only 86 per cent. with 507,000 tons.

Although the amount of seafood collected and bought by the state fell short of target, there was a substantial increase — from 75,780 tons (14.7 per cent. of the total) in 1976 to 180,970 tons (35.6 per cent.) in 1977.

### Weaknesses

It was recognised in the report that, along with the encouraging results, the fisheries in the southern province had also shown several weaknesses. Seafood production had stagnated and even tended to decrease. Processing had diminished both in quantity and quality, and the market had been consistently in turmoil.

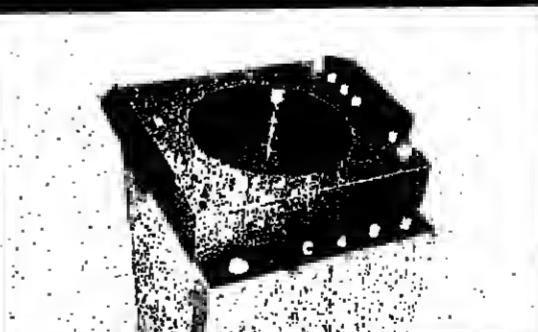
If the province is to achieve its production target of one million tons a year by 1980, said Deputy Premier Do Muoi, "we must solve many problems."

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# ATLAS Rugged Radars.



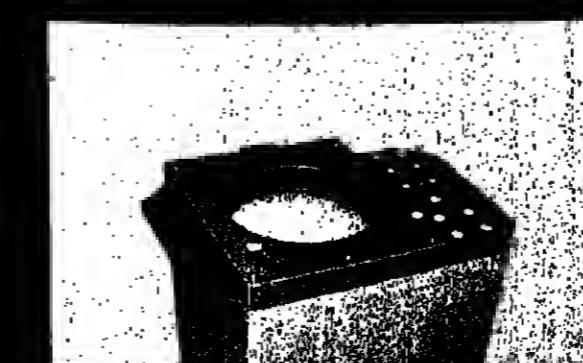
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Put ideas into practice

A fish seller shows his wares in a Kerala market. More than 50 per cent of the catch is eaten fresh and upwards of a third is sun-dried.



# 900,000 FISHERMEN BUT NOT ENOUGH FISH

A NEW "working paper" describing small-scale marine fisheries in India must rank among the most practical and compact guides to this activity.

It provides general information on the fisheries and looks at their problems and prospects.

From presentation of relative data and a brief history of the fisheries, the report goes on to deal with the following subjects: Fisheries administration, specialised institutions, fisheries corporations and co-operatives, resources, production,

craft and gear, landing facilities, handling and processing of fish, marketing and distribution, export and import trade, ancillary industries, socio-economic aspects, and government policy and development plans.

As can be readily appreciated, most of these chapters call for a report on their content. This is especially the case because India is a sub-continent containing the equivalent of a dozen or more European countries and has a population — some 600 million — about double that of Europe.

#### Production

The Indian coastline exceeds 6,000 km and marine production amounts to more than 1.4 million tons. (Another 800,000 tons of fish are harvested from inland waters.)

More than 50 per cent of the catch is consumed fresh while upwards of a third is sun-dried. It is estimated that the number of fishermen and their families exceeds 5.5 million and the vast majority are involved in small-scale fisheries.

Even though so many people are engaged in fisheries — the number of fishermen is estimated at more than 900,000 — there is room for increased production from the coastal waters.

In addition to the administrative structures at central and state government levels, India

**CEDRIC DAY looks at a new FAO working paper on India**

of marine resources is still fractional," the report states. "There is much unexploited area, even along the coastal waters which are potentially rich fishing grounds. The offshore waters largely remain under — or unexploited. In this context the development of small-scale fisheries should have high priority, not only for increasing fish production from this sector but also for further betterment of the socio-economic conditions of this community."

#### Increase

Of the 22 states and nine union territories that comprise India, eight states and five union territories have maritime fisheries. All of these could increase the exploitation of their coastal waters.

"The present exploitation



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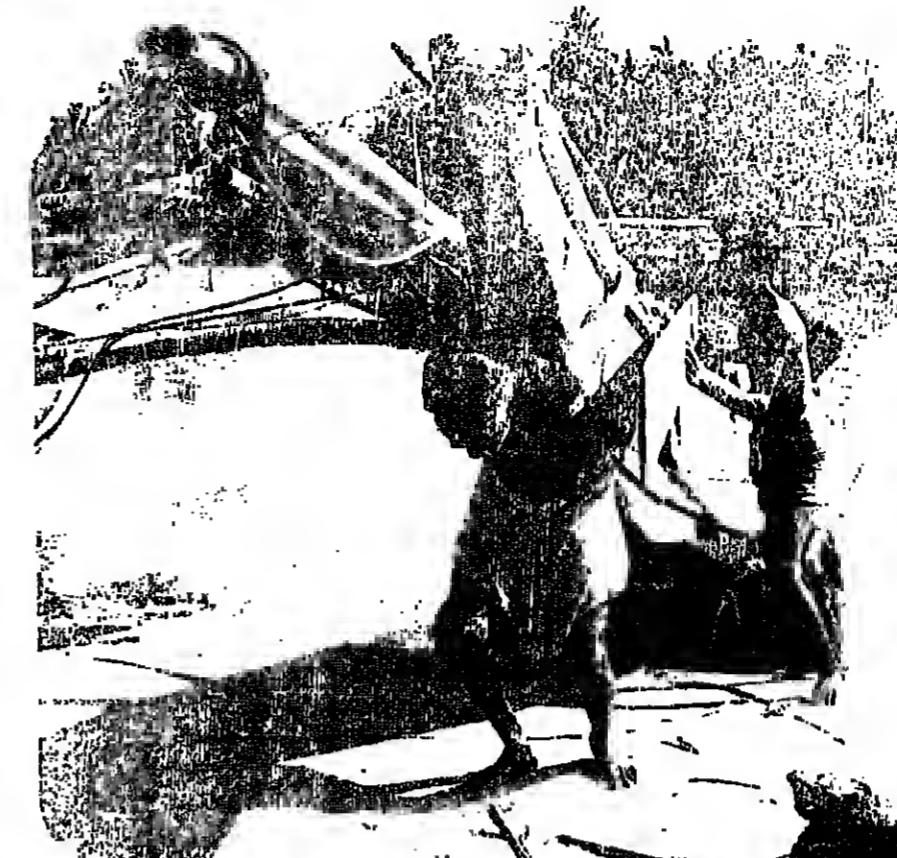
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Beach landing the hard way — the crew heave a fishing canoe on to the shore in Kerala state.

National Institute of Oceanography in Goa, which has regional centres in Cochin and Pondicherry.

fisheries co-operatives, but only about a third of these are operative.

The prime requirement seems to be to make these various institutes and other organisations more effective in the interests of small-scale fishing in India.

Several important development projects, supported by international and bilateral agencies, including FAO, are providing assistance in development of the sector.

## Doing things the hard way

A fish seller in southern Indie carries her wares from the beach to the town market.

including harbours, boat building and exploratory fishing.

#### Allocations

The overall importance accorded to fisheries development by the government of India is reflected in funds allocated for this purpose in succeeding Five-year Plans. Expenditure in the first Plan (1956-59) was 27.8 million rupees. For the fourth Plan (1969-74) the sum was 511 million rupees. In the current Plan (1974-79) the allocation is 1,619.4 million rupees (about £103 million).

Judging from past experience, the expenditure is likely to amount to about 70 per cent of this allocation. Unfortunately, from the point of view of most fishermen, the industrial rather than the small-scale sector chiefly benefits from Plan funds.

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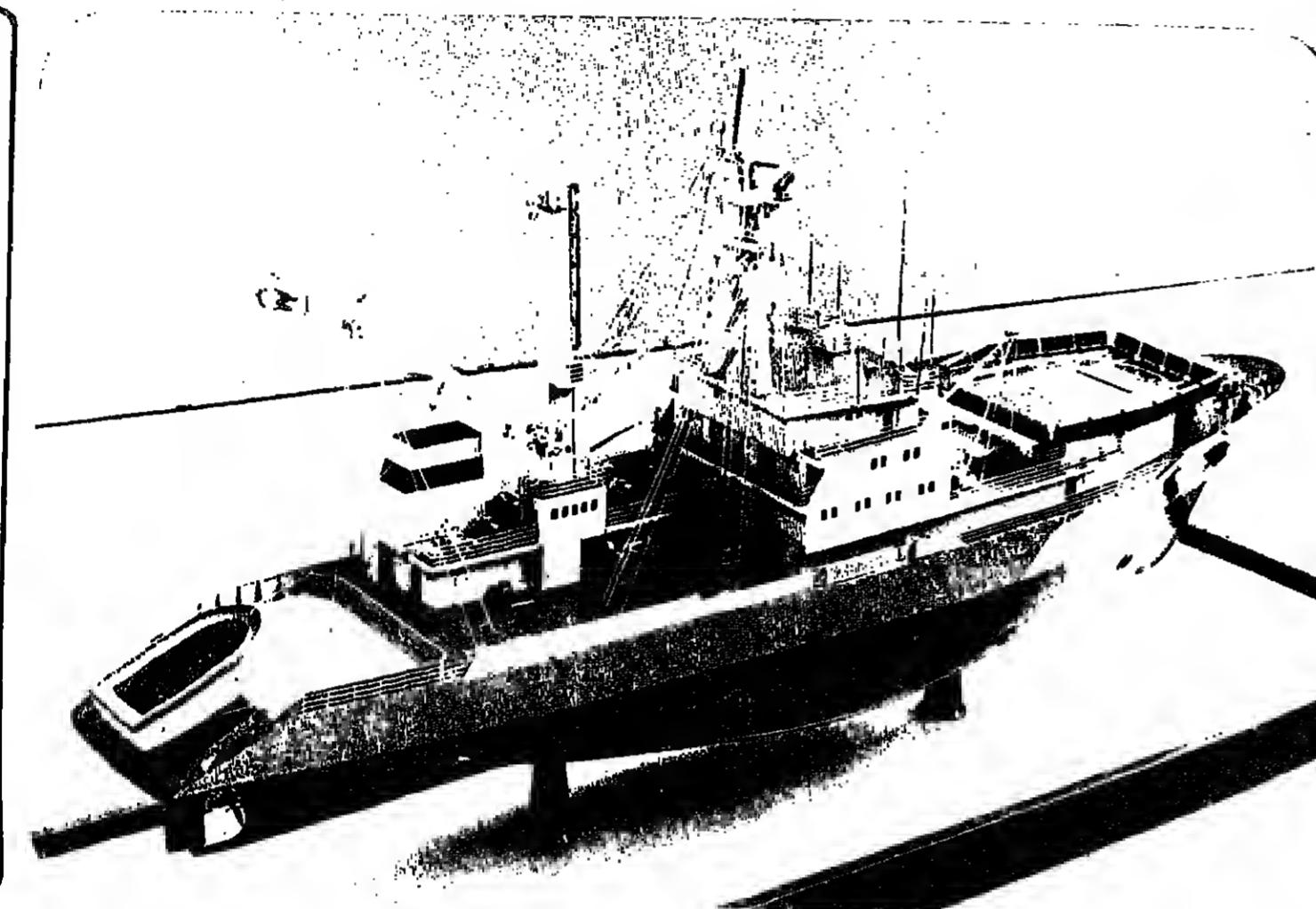
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This model of the *Rodina*, building in Poland for the Soviet Union, shows how much she departs from the traditional design of the tuna purse seiner. She is 86 metres (278.8 ft.) long overall, 76 m. b.p. with a breadth of 15 m. and dead-weight capacity of 1,800 tons. There will be accommodation for a crew of 36.



## Main dimensions

Length overall, 85.0 m.

Length b.p., 76.0 m.

Breadth, 15.0 m.

Depth to upper deck, 9.2 m.

Moulded draught, 8.0 m.

Deadweight, 1,800 tons.  
Propulsion, Sulzer-Zgoda  
5,200 hp diesel.  
Fuel oil, 1,100 cu. m.  
Fresh water, 84 cu. m.  
Lube oil, 56 cu. m.

FOR ITS second series of tuna purse seiners, the Polish shipbuilding industry has turned to the North Shipyard in Gdansk. The first series, for Mexico, were in the now-traditional California-style, designed by Rados and using the ammonia brine well system of refrigeration.

The new series is for the Soviet Union. It begins with the 85 metre long *Rodina* which was launched in February and it is to designs of ship and process system substantially different from the conventional tuna seiners.

Designed and built to conform to regulations of USSR Ship's Register, the *Rodina* will have a Sulzer-Zgoda type 8ZL40/48 main engine developing 5,200 hp at 530 rpm. Power plant consisting of three 800 kVA alternators will be driven by three Sulzer-Cegelski 6AL25 engines.

### Fuel oil

When proceeding to fishing areas, the ship will be able to carry 1,100 cu. m. of fuel oil, 84 cu. m. of domestic water and 55 cu. m. of lube oil.

The ship's hull is steel with aluminium alloy superstructure. She has a transverse framing system and the hull is divided by bulkheads forming the following compartments: holds 1, 2 and 3; fuel-cargo tanks, engine room; fuel and water tanks.

For fishing, the *Rodina* will have a purse net 2,000 m. long by 250 m. deep. Catching operations can be controlled from three points: the signal mast, the navigation deck and the despatch-control cabin.

In this picture, completion was still some way off for the Gdansk yard's prototype 85 metre tuna purse seiner for the Soviet Union.

## A whole changed concept in seiner design

She is designed for fishing and will have electric single-drum winches powered by a Leonardi system. They will have a nominal pull of a haul-in speed of 15 m/min. Each drum has a maximum setting speed of 15 m/min. Each drive uncoupled will have a capacity for 2,500 m. rope.

Other deck machinery includes an electric single-drum winch, an AC electric "choker" winch, a warping capstan, power block.

To assist in net handling there will be a skipper's lift in, beam-and-powered engines. She will also have speedboats 4.5 m. long by 90 hp outboard motor.

The ship's processing plant system has been designed for a high quality product and prices. Tuna will be sorted and drained of blood, giving slightly pink colour.

On the fishing deck, the fish will be removed and the net washed with seawater to remove salt.

### To the holds

The fish will then go to the holds which will be air-frozen down to minus 25 deg. C.

To help handle big catches above the capacity of this plant, the ship will have four brine tanks for freezing unsorted tuna.

Offal and waste fish will go to a vertical freezer with a capacity of five tons in 24 hours to be held as food for animals in fur farms.

The refrigeration plant will use Freon R-22 and its main units will be three screw compressors with an output of 120,000 KCal/hr, and associated plant, providing cooling down to minus 35 deg. C.

The *Rodina* will carry a helicopter. She will be completed later this year.

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Electronics: SP-sailor radios.

Atlas fish finding equipment.

Accommodation: 11 berths/13 single cabins.

Fishholds: 3 fishholds. Total capacity 370 cub. m. All holds insulated with polyurethane and lined with steelplate.

The vessel could easily be shelter-decked.

Price: Offers invited for a real bargain.

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**BOATS & BUILDERS****TWO MORE  
FROM  
DESCO**

AN INTERESTING boat completed recently in the St. Augustine, Florida, yard of Desco Marine is the 68 ft. long GRP and wood vessel *Explorer I*. She has been built for Desco's parent company, the Whittaker

Corporation, and is fitted out for snapper fishing. Desco has now started deliveries against the orders it has been taking on the United States west coast (See *FNI* January).

The main engine is a Detroit Diesel developing 365 hp and turning a Columbia fixed propeller through a Twin Disc 6:1 gearbox. The auxiliary

engine is a Lister diesel. Desco has now started

deliveries against the orders it has been taking on the United States west coast (See *FNI* January).

Fitted out for shrimp and fin fishing, the 75 ft.

**ACM'S FIRST**

THE 62.75 metre long two-purse seiner *Jacques Cartier* is the first fishing ship to be completed this year by the Saint-Malo yard of Ateliers et chantiers de la Manche. She will be operated in the Atlantic tuna fishery by Compagnie Générale de Grande Peche.

**Standard**

Built to the yard's standard design for ships of this type, the *Jacques Cartier* is 851 gross tons and has 1,000 cu. m. capacity in her fish tanks.

She is powered by a General Motors diesel engine developing 3,600 hp at 900 rpm, which gave her a speed of 18 knots.

Accommodation of a high standard is provided for a crew of up to 18.

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from Apeldoorn**

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Anza, because we're familiar with your specific requirements and problems. And remember: Anza Apeldoorn isn't cheaper, Anza is better! When you want the best

you can get, buy from Apeldoorn and you will find that Anza is cheaper in the long run! Anza Apeldoorn - at home in any sea.

**DRUM SEINER  
JOINS A  
NEW FLEET**

THE 19.8 metre long drum purse seiner *Prospect Point*, delivered to her owners in mid-February, is the 12th boat in a new fleet operated by the Quality Fish Company in British Columbia. This is a co-operative group which custom packs its product through Queen Charlotte Fisheries Ltd., and sells canned fish in Canada and Britain.

Quality's general manager, Kim Gaynor, expects three more boats to be delivered this year.

Of welded aluminium construction, the *Prospect Point* comes from the Richmond, British Columbia, yard of Shores Boat Builders Ltd. She was designed by David Moore.

The main engine is a Caterpillar D343 diesel rated at 365 hp and giving a speed of 10.3 knots. A Twin Disc Omega reduction gear enables the engine to run at speed while the propeller turns over

one of the first three to be fitted in a vessel on this coast. Other deckhouse equipment consists of a Furuno radar, Ekoletic sounder, and two radios.

On deck, Seatec winches handle the anchor and purse seine net.

Quality Fish Group is a two-year-old company headed by Byron Wright who is skipper of the purse seiner *Prosperity*, a four-year-old aluminium hull boat. The owner of five boats, he has been fishing for 25 years.

The *Prospect Point* has sleeping accommodation for six men in the forecastle, plus the skipper's accommodation under the wheelhouse. But she is expected to be operated by five men plus skipper. She cost about \$500,000 to build and equip.

Shore Boat Builders started in business ten years ago, building small aluminium boats. About five years ago, the company moved to Richmond, a municipality adjoining Vancouver, and is engaged in the construction of larger craft for the coastal fishing fleet.

THE Diesel Shipbuilding Company of Jacksonville, Florida, has delivered the 72 ft. (22 metre) long *Captain Jimmy* to Surgeon Miller and Foch Mervin of Guanajuato, Bay Islands, Honduras. She is a steel-hull combination lobster and shrimp vessel.

This is the second boat the yard has built recently for owners in Honduras.

**Propeller**  
She is powered by a GM Detroit Diesel rated 340 hp at 1800 rpm and turning a fixed propeller through a 6:1 reduction gear.

With a gross tonnage of 96.21, she has a hold capacity of 2,700 cu. ft. (76.45 cu. m.). The catch is cooled by a two-unit Thermo King FBH refrigeration system.

The boat is equipped with a Stroudsburg Model 519T winch.

**Series built  
GRP boat**

A NEW type of GRP-hull fishing boat developed for series building has been completed by Constructions Nautiques du Pouliguen in France. The 15.3 metre boat is intended for inshore fishing on the west coast.

Named the *Fleur des Vagues*, she is 5.2 m wide and is powered by a 220 hp engine.

GRP boats are not new in the French fishing fleet, but this comes from a moulder normally associated with yacht and power boat hulls who delivers them for finishing off in boatyards.

This first boat was bought by two brothers, Serge and Daniel Debuc, who are members of a Croisicais fishing group.

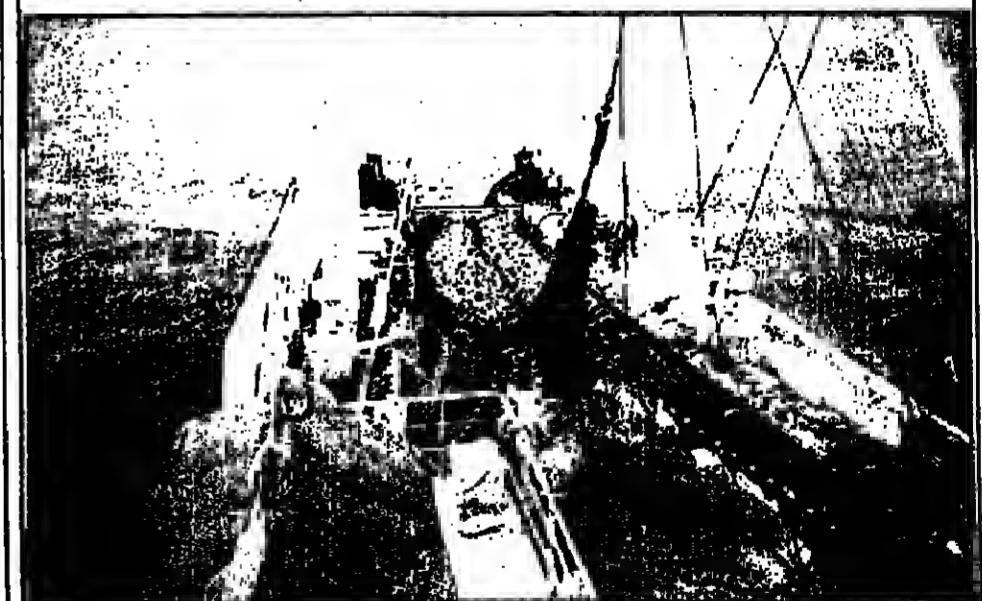
Its cost, ready for operation, is estimated at about £20,000 francs (£24,310).

IN A QUIET year for fishing boat construction, French yards delivered only four trawlers last year. They also launched a tuna purse seiner on a small research vessel.

At its Dieppe yard, Atelier et Chantiers de la Manche completed the 626-ton stern trawler *Julien Quere*. Three 85-ton small stern trawlers were built for Syria by Ateliers et Chantiers Ziegler Frères.

The tuna ship launched was the *Prince de Joinville* at the ACM Saint-Malo Yard.

Ordered by CNEXO, the 100-ton research vessel *Thalassa* is being built by Constructions Mécaniques de Normandie.

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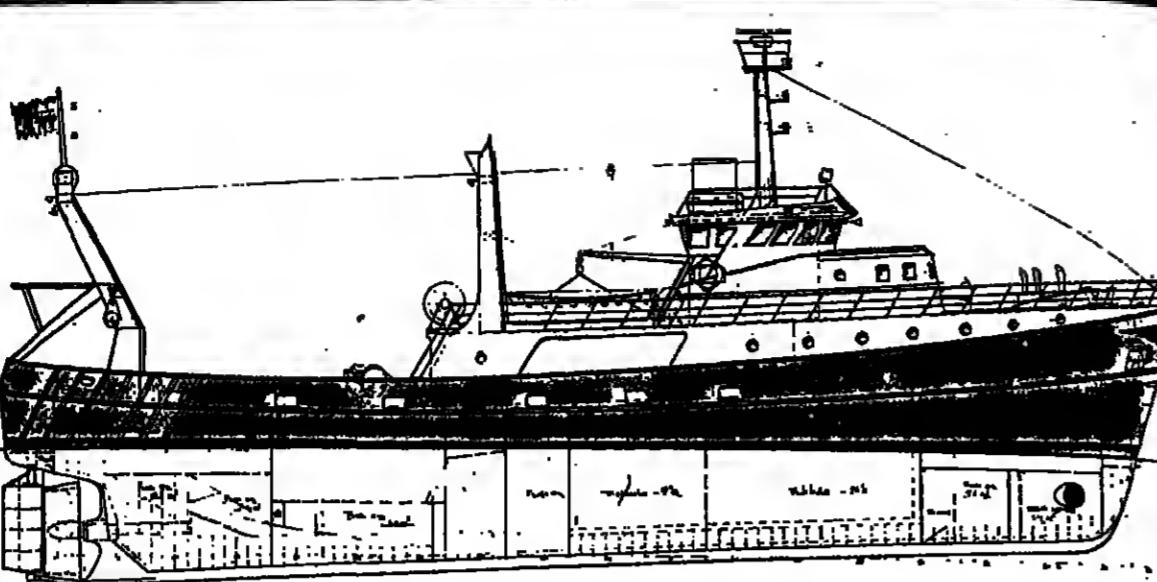
## BOATS & BUILDERS

# VIKSUND EXPANDS

WELL-KNOWN as a builder of the Norwegian sjark in GRP, the firm Viksund Baat is planning a new plant for the series production of fishing boats in the 58½ ft. (17.8 metre) class.

Viksund began its line of GRP sjarks with a 25 ft. boat. It then went up to larger versions and a few years ago brought out a 42 ft. small trawler. Demand for its boats led to the setting up of the plant at Rødsjkaer near Harstad in North Norway. But the 58½ ft. boat will be built in the plant near Bergen where Viksund turns out its range of pleasure craft.

According to Erling Viksund, who founded the company in 1965, the first of the larger boats has been sold before going into production. But he said he was taking time over its development. "The prototype will be tested under various rigorous sea conditions; it will also be tested in the Ship Model Tank in Trondheim, and by Det norske Veritas."



### RESEARCH TRAWLER

THE Massant yard in Holland is building a fisheries research ship for India. The 40-metre long stern-trawler type vessel is one of the largest the yard has built.

With a breadth of 8 m., the ship has two holds with a total capacity of 250

c.u.m. The forward hold can be cooled down to minus 24 deg. C and the after hold to minus 2 deg. C.

The main engine is an Alpha diesel

developing 1,740 hp at 245 rpm. The propeller will be in a nozzle and the whole of the stern gear is being supplied by Alpha.

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### WET FISH STERN TRAWLERS FOR ICELAND

THE Norwegian yard Flekkefjord Slipp has delivered two wet fish stern trawlers to the Icelandic company Iðabrdron HF of Reykjavik. The ships are later versions of the seven stern trawlers which the Flekkefjord yard delivered to Iceland a few years ago.

Designed by Ankrumiken Marine A/S of Bergen, the hulls were built by Kvina Verft and the fitting out was done by Flekkefjord Slipp.

#### Dimensions

The ships are 49.87 metres long with a breadth of 9.5 m and depth to shelterdeck of 6.6 m. The cargo hold can take 3,200 boxes of 70 litres capacity or 2,500 boxes of 90 litres.

Fish handling equipment includes washing machine and conveyor belt. Refrigeration plant is heated and an icing machine has an output of 10 tons in 24 hours.

The ships were built to Det norske Veritas' Class +1A1 Stern Trawler Ice C and they also meet the requirements of the Icelandic Ship Inspectorate.

A gantry over the stern provides the normal leads for the trawl wires. From this gantry they are led forward just inside the bulkheads to the forward end of the deck where blocks direct the lead abeam towards the Sutherland twin-barrel winch.

This arrangement gives a clear deck aft with no wire running across it. The wheel barrels are mounted fore and aft and they are wide and shallow. Each will hold 600 fathoms of 1½ in. wire. The shallow drum allows the pull to be nearly equal on each point in the haul.

#### Net drum

A Lossiemouth split horizontal net drum is mounted close to the winch on the port side. This gives a direct lead to the transom roller mounted just above deck level and gives the full length of the deck to haul the net while leaving the starboard side clear.

The wheelhouse is well forward merging into the aluminium wheelhouse at the bow. The engine room is situated forward from amidships with the hold aft of it.

#### Propeller

Each boat is powered by a Volvo TMD 120A engine developing 260 hp and a propeller in 3.10 ratio through an MRF gearbox.

Electronics equipment include Kodens, radio from Marconi, Vemar, Dosen, Kodens radars, Mk.2 Navigator receiver, Sailor SS-B and VHF telephones.

## Shift work trawler

A NEW 74 ft. wooden boat built by J. and G. Forbes of Sandhaven in Scotland will be worked from the Shetland Islands by six men. But she will have a crew of nine, with three men resting ashore so that the boat gets all the fishing time possible.

The Altair is owned by a group of seven men headed by skipper John Peter Duncan. She is fitted for trawling for white fish.

An extended shelter under and forward of the wheelhouse gives the Altair an unusual profile.

The main engine is a Kelvin diesel developing 495 hp at 1,315 rpm and turning a fixed-pitch propeller through a Reintjes 4:1 reduction gearbox. The propeller is shrouded in a Dutch Hodz nozzle.

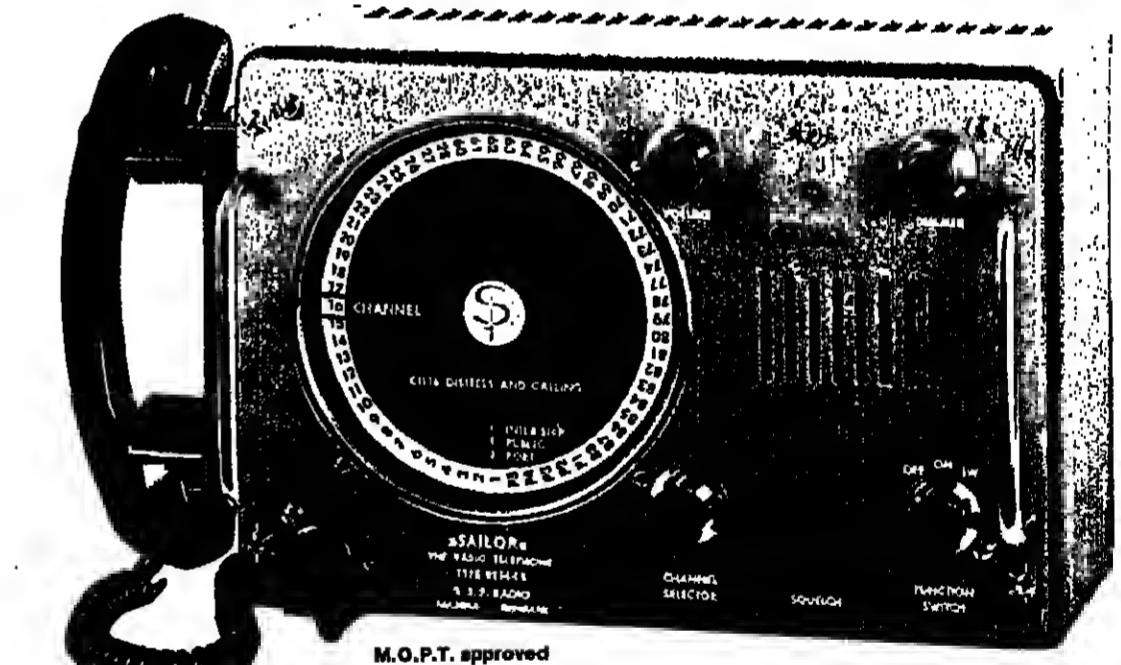
The main winch is a Norwegian Norwinch machine model TC11. The boat is also equipped with a Lossie Hydraulic Company 24 in. powerblock with Norwinch boom swinger.

Fish finding equipment includes a Wesmar SS220 sonar and Atlas 720 Fishfinder echo sounder.



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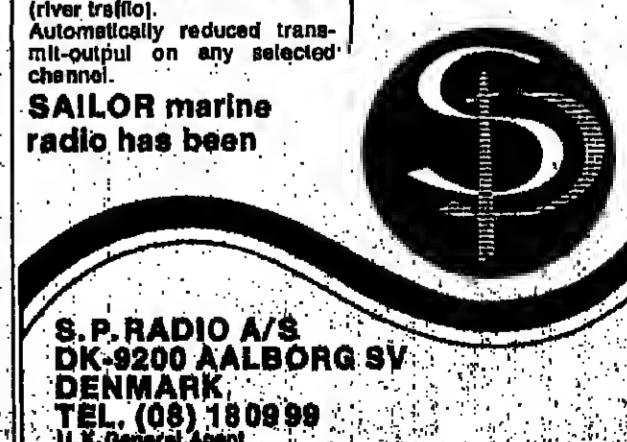
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## BOATS & BUILDERS

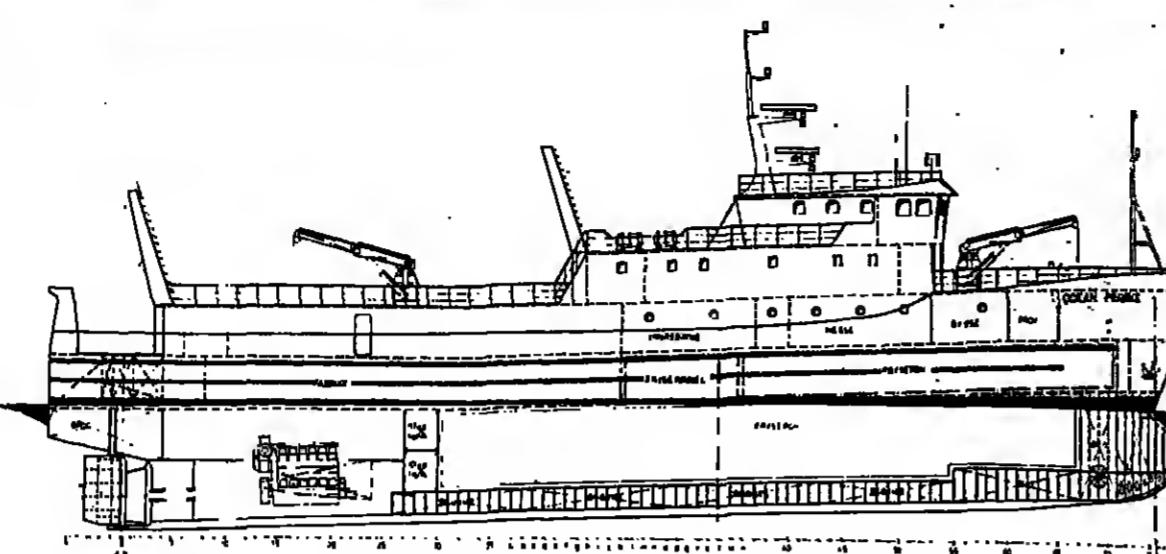
### ADVANCED SHRIMP FACTORY TRAWLER

DESIGNED to operate in the waters off Greenland, the 56.4 metre long *Ocean Prawns* is one of the world's most advanced shrimp catching and processing ships.

The ship was built by the Norwegian yard Langsten Slip & Bnayggeri A/S of Tønsberg for

Danish owners Birger Pedersen, Flemming Nilsen and Kristian Jensen of Bornholm.

She is designed for the harvesting of the pink shrimp (*Pandalus borealis*) and to process it aboard at the rate of some 40 tons in 24 hours. For this, she has a highly



mechanised factory line capable of boiling and peeling shelled shrimp and peeling and vacuum packing.

The line for shelled shrimp consists of two steam boilers, three griders by Dagemit of Denmark, a freezing tunnel and packing desk with automatic weighing in five kilo boxes.

Conveyors and other equipment in the process lines were supplied by Kronborg of Denmark.

There are also two hoisters in the peeling section, which has two American Laitram peeling machines and Laitram cleaner and separator. The prepared shrimp are moved from factory to fish hold by a three-ton elevator.

Refrigeration plant is by Sabroe and consists of four TSMC-8-100 compressors with a capacity of 4 x 93,000 KCal in 24 hours. The three Sabroe freezers can handle up to 30 tons a day.

On the fishing deck the *Ocean Prawns* has two trawl arenas so that two sets of gear can be ready for use at the same time. The main winch is a Hydraulik Brattvaag machine.

Because of the difficulty of trawling in ice conditions, Langsten Slip has designed a special hydraulic gallows which help lead the trawl wires very close to the after part of the ship into the sea.

The *Ocean Prawns* is 48.92 m. long overall, with a breadth of 10.4 m. and depth to

shelterdeck of 7.08 m.

She is powered by a Wiedmann model 72X engine developing 2,100 b.p. at 30 rpm and turning a four-blade Wiedmann controllable pitch propeller.

The auxiliary engine is a Caterpillar 346 driving a 228 KVA Stamford generator.

#### Crew of 33

Accommodation is provided for a crew of 33. Fish hold capacity is 1,110 cu. m.

To assist in finding the catch, the *Ocean Prawns* has two Simrad EO echo sounders, MC situation display unit and CI scope. She has Decac radars and Magneon MX 1112 satellite navigator. Radio equipment consists of Sailor TI-26 SSB, Skant TRP 5000, and Sailor RT 143 and RT 144. There are two radio direction finders, one Furus and one Simrad.

A specialist in the building of ships of this type, Langsten Slip has in the past three years delivered eight such vessels to the Faroes and Denmark.

THE Norwegian purse seiner and trawler *Torbas* is the first ship of a new class, designed by Ulstein Trading and built by the group's Hulø yard.

The 55.7 metre long ship was delivered to her owners Stale and Torle Remøy of Leirby in February.

With the growth of the blue whiting fishery and possibly other deepsea fishing opportunities, the combined purse seiner and pelagic trawler large enough to venture far out from the coast could be an important new vessel type in the Norwegian industry.

In designing the *Torbas*, therefore, Ulstein's project department worked in close co-operation with the owners to create a vessel that could be developed for series building.

The ship has a length b.p. of 49.8 m., a moulded breadth of 10.4 m. and depth to shelter deck of 7.45 m. Her gross tonnage is 900 and deadweight capacity 1,000 tons. She has a fish hold capacity of about 8,000 hectarites (800 tons) of which 4,000 hl is in RSW tanks. There is also refrigerated space of 1,500 hl. The cooling plant is by Lehmkul.

forward on the shelter deck.

The trawl wires are led through blocks to the trawl gallows.

#### big purse net, the *Torbas* is operated through 360° deg. and so can serve all the hatches.

The *Torbas* is a fast ship with a speed of 16 knots. To achieve this, she has a Denitz BV 6M 500 1300 hp engine

turning an Ulstein controllable pitch propeller. The ship is also fitted with two Hydrex transverse thrusters type 90 TV of 400 and 500 hp.

navigation equipment, is the Simrad CD Situation Display sonar system. Echo sounders are by Elac and included the LAZ and Superlolar. For Navigation, the ship has two Decac radars and RMS 1600 and RM 916, two Koden automatic radio direction finders, Robertson AP7 autopilot, Elca Navigator MK 21 receiver, and Marpatav MX 1102 for satellite navigation. Steering gear is by Bentford.

For radio communication, the *Torbas* has been equipped by N.P. Radio with Sailor medium and short wave, etc. and two Sailor radio telephones type P.L. 11 and P.L. 14.

For better stability, the ship is fitted with the UL 100 passive stabilising system.

### LARGEST AND THE FASTEST

NORWAY'S largest fishing vessel, the trawler and purse seiner *Libus*, has been delivered by Georg Eides Sønner A/S of Hjelmsbu to Peder O. Lie of Brattvaag. The 1,348 gross ton ship is 71.3 metres long with a beam of 11.6 m. and depth to shelterdeck of 8 m. Her 15-man crew have single cabins

each with shower and toilet.

Powered by a Wiedmann 9ATG engine of 3,600 b.p., the *Libus* has a speed of 17.5 knots, which makes her Norway's fastest fishing vessel.

She replaces Peder O. Lie's two purse seiners. These are converted whalers, and the ship is reported to have cost about 21.5 million kroner (€2.2 million).

owner in the Faroes.

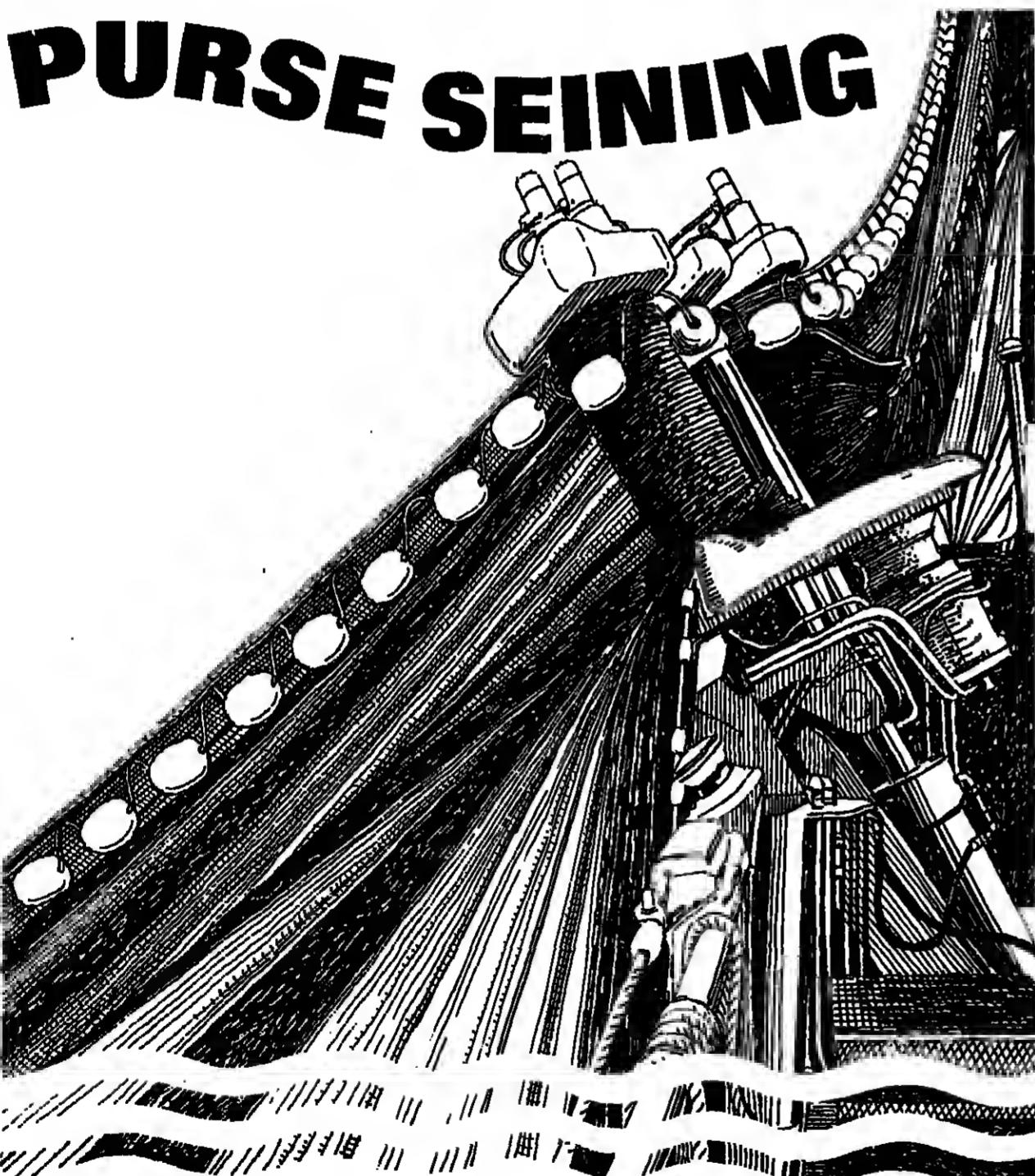
The *Libus* began her career fishing for winter capelin off northern Norway. When the capelin season ends, she will go fishing for blue whiting in the north-east Atlantic.

Designed by VIK & Sandvik A/S, the

ship is reported to have cost about 21.5 million kroner (€2.2 million).

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### PURSE SEINING



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The hydraulic gallows designed and made by Langsten Slip.



The trawl deck, showing the main drum and the two net arenas.

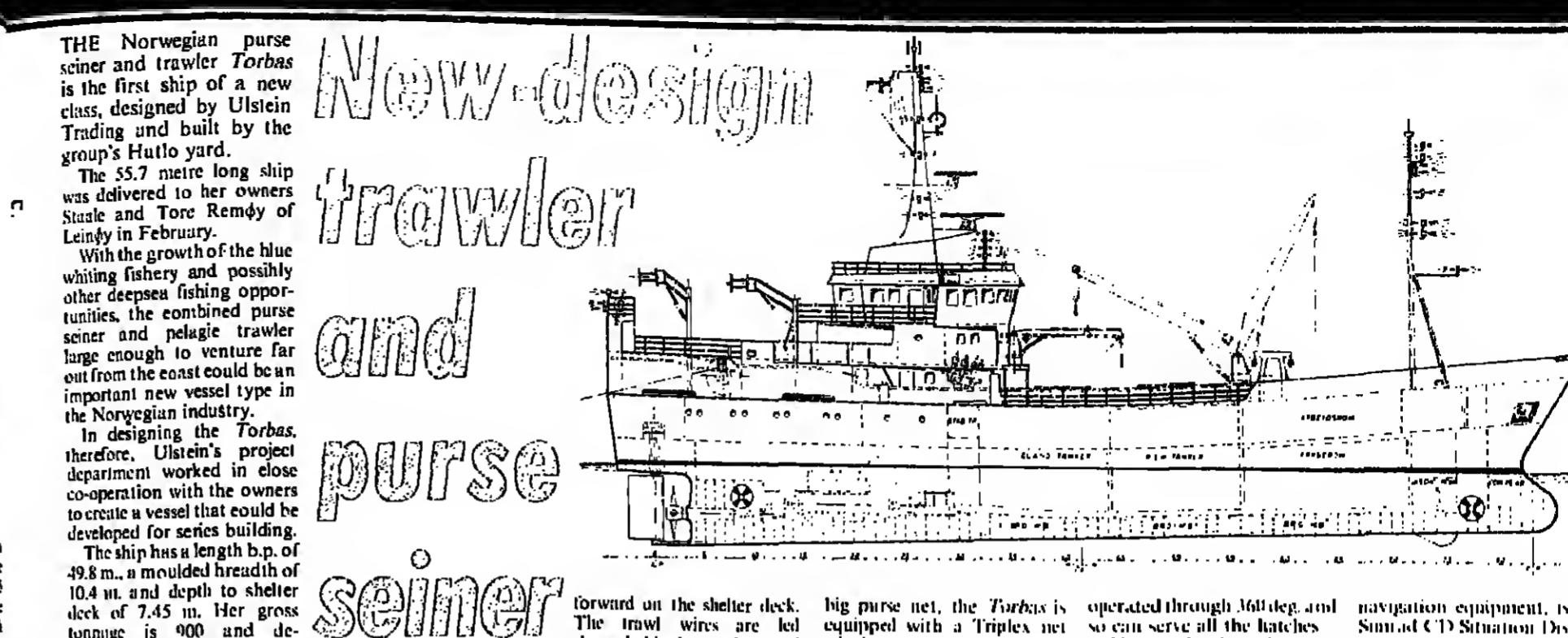
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## BOATS & BUILDERS

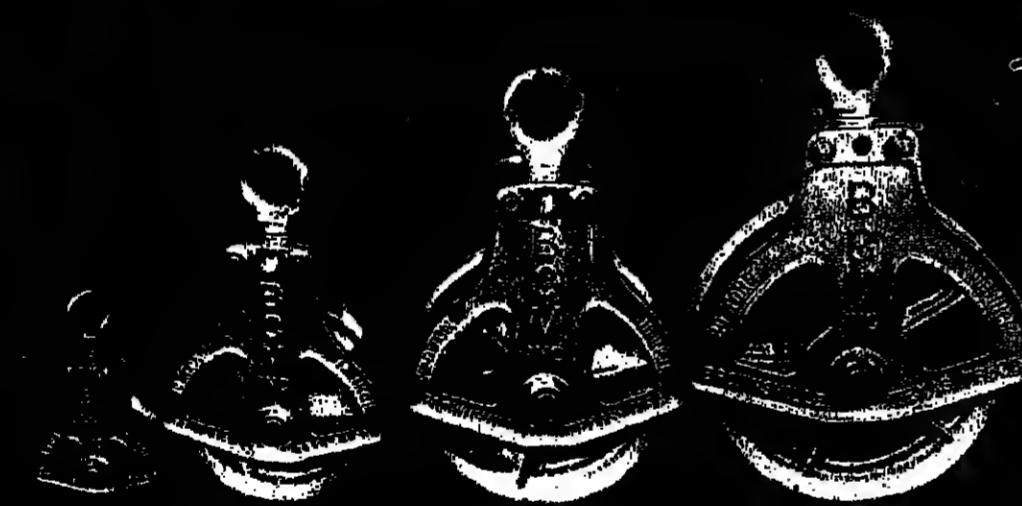


TREEVE MARINE LTD., of Hale in Cornwall has exported one of its 15 and a half foot (4.7 metre) long Cove boats to Indonesia for use as a purse seine skiff.

The GRP boat has Morse Teleflex steering with forward gear lever and throttle control. It is powered by a Lister ST1MG/R2 marine engine. A Whale gusher pump is also fitted.

Seen on the left in this picture, the skiff

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## STEEL BOATS TO JERSEY

THE FIRST of a new series of 35ft. (10.67 metre) long steel hull workboats built by the English yard Avon-Brunel Marine Ltd., will go to Egypt for use as a harbour launch. The second will operate as a fishing boat from Jersey in the Channel Islands.

Since the design was introduced, Avon-Brunel has had more than 60 enquiries and several more boats will go into fisheries in Britain and abroad.

The hull is of the twin chine type with a transom stern. All of the plating follows developed curves so that no difficult plate bending is required. The beam is 11 ft. and the draft between 3 and 4 ft. depending on the machinery fitted.

Fuel capacity is 200 gallons and this can be either in separate tanks or tanks built integral to the hull.

The boat can be fitted out with either a forward or aft wheelhouse to suit requirements. The hull is available for fitting out by the customer or it can be completed by Avon-Brunel with a variety of equipment as options.

### Ford engines

Engines can be single or twin screw, with the optimum single engine the Ford six-

cylinder diesel. Speed range is between nine and 12 knots.

The boat for Jersey will have a Darglow six-cylinder Ford engine which produces 113 hp. These Darglow engines are re-conditioned units which are available at considerably reduced price compared with new engines.

### Exports

It will be a forward wheelhouse version and has been ordered by North Jersey Fisheries Ltd., Avon-Brunel's agent in the Channel Islands. Avon-Brunel is looking for agents in various areas of Europe. It anticipates a considerable export market for the design.

The cost of the bare hull with fittings is £4,750. This is to Lloyd's requirements allowing the boats to be completed to Lloyd's standards, if required. The 35ft. hull offers a 21ft. cockpit and this together with the low price should make these boats an attractive proposition to fishermen.

A YARD in England is building two small GRP hull boats for fishery research work in Saudi Arabia. The order, worth £85,000, was placed last month by the White Fish Authority with the Cornish builder Cygnus Marine.

Designed for work in the Saudi Arabia fishery development project now in its third year, the boats will be used along the Red Sea and Persian Gulf coasts.

"They could," says the WFA, "be the forerunners of many commercial fishing boats needed to modernise and expand the Saudi fishing industry."

According to WFA technical director Robert Bennett, the two boats will play an important part in the programme.

Boats of modern design are seen as essential if substantial long-term improvements are to result from the project. The boats will need to be simple enough to be worked by fishermen used to much more primitive craft and they will be serviced by local firms.



WFA technical director  
Robert Bennett — first  
boat in a new fleet for  
Red Sea and the Gulf.

With about 25 of these boats, landings in the eastern region of Saudi Arabia could be boosted 25 per cent. This would mean 1,500 tons more fish worth about £2.2 million a year. Calculations now being finalised for the Red Sea coast should indicate a substantial potential there as well.

Because of the work they will have to do in test fishing and possibly training, the two Cygnus prototype boats (see drawing), will be more sophisticated than the eventual commercial craft. One of them will work in the Red Sea and the other in the Gulf. Saudi fishermen will participate fully in trials and demonstrations.

The design is based on the Cygnus GM-32 hull. The wheelhouse will be forward as will accommodation. The engine room will be amidships and the fishroom aft. Fishing methods will include stern trawling, gill netting and longlining.

Each boat will be about 10 metres long overall, 3.8 m. in the beam and have a maximum draft of 1.5 m. The insulated fishroom will have a capacity of 3.5 cu. m. It will be powered by a Sabre marine diesel with a heavy-duty reverse reduction gearbox driving a Brunton's fixed-pitch propeller. The engine will be tropicized and will produce 100 hp under continuous operating conditions, to give a free running speed of eight knots.

Deck equipment will include a twin-harrel, one-ton Spencer-Carter hydraulic winch and a Spencer-Carter pedestal-mounted net-line pot hauler. The winch will have a total capacity of 450 fathoms of 10 mm diameter warp on each drum.

Navigational, communications and fish finding instruments will include a Decca 060 radar, Decca 150 autopilot, Sailor RT144 VHF radio, and a Simrad echo sounder.

### Expatriates

"These first vessels will be commanded initially by experienced expatriates," said Mr. Bennett. "For the successful introduction of the commercial boats, however, local skippers and crews will have to be trained and the shore facilities vastly improved. We have made proposals for practical training courses in the use of radar, echo sounders and sonar, and plans for improved shore facilities are advanced."

In addition to the 10-metre vessels the WFA is preparing proposals for the introduction of smaller glassfibre boats for working close inshore, and for steel vessels of between 20 and 24-metres, which would be able to stay at sea longer and fish in deeper water.

## Indian yard wins award for exports

INDIA's Engineering Export Promotion Council has awarded a certificate of export merit to the Calcutta GRP boatyard, Gladstone Lyall and Company. The award is for an outstanding performance in the year ended March 1977.

Gladstone Lyall set up its modern yard in the Indian west coast port of Mangalore in 1971 with technical collaboration from Watercraft Ltd., of Britaldo.

It built its first GRP hull trawler in 1971. Four such boats, measuring 32 ft. (9.75 metres) long, were exported to Bangladesh in 1973 and 1974.

In 1975, the yard obtained an order from Sri Lanka for 30 GRP boats each 38ft. (11.6 metres) long. Yards in 18 countries, including Britain and Japan, tendered for this contract which was assisted by a loan from the Asian Development Bank.

The yard has built GRP boats for Kenya and Somalia.

## US yard designs patrol vessel

LANTANA Boatyard in Florida, USA, has designed a patrol boat for 200-mile fishing limits. The design marks a new departure for this company which has specialised in steel and alum-

inium fishing and work boats.

The new design can be built up to 220 ft. It is suitable for offshore vessels capable of making extended patrols. The yard is planning to market world-wide.

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## PORTS & MARKETS

### Cochin cold store

INDIA'S Ministry of Agriculture has approved proposals from the Marine Products Export Development Authority (MPEDA) to set up a 500-ton cold store in Cochin on the south-west coast and another of 300 tons capacity in Calcutta. The National Dairy Development Board is to erect them on a turnkey basis.

Because of delays in developing fishery harbours, the MPEDA is to provide emergency landing facilities in some ports. Cemented landing platforms are being considered for centres in several coastal states.

## Record year for Norway's sales...

### but rising costs pose new threat to exports

DESPITE the strong position of the kroner in relation to other currencies in 1977, Norwegian fish exports were not priced out of world markets.

As reported in February FNI, sales jumped from £307 million in 1976 to a new record £401 million last year. And the prospects for 1978, with the recent devaluation of the kroner and a good season for winter cod, are regarded as good.

Reports from Norway point out that there has been a steady

rise in the market for frozen fish and, equally important, it appears to have become more stable.

During 1977, exports of processed fat herring totalled 3,300 tons worth almost £2.3 million. Most of this went to markets in Sweden, Finland and Denmark.

The year saw record sales of Norwegian fish meal and oil, with sales up by about £30 million to £160 million.

There are looming problems in some export markets, however, and the Norsk group (second largest exporter) has warned that future expansion in the United States is threatened by mounting costs of production.

Sales by the group in 1977 were worth almost £40 million. Land-based freezing plants shipped out 22,000 tons and its factory ships 15,300 tons. These ships deliver their fish in the United Kingdom, whose imports from members of the Nordic group in 1977 amounted to 24,800 tons, worth about £25 million.

In another Norwegian export venture, Brodr. Jangard A/S of Aalesund flew 78 tons of klipfish to Mexico to ensure that sufficient supplies of salt fish (bucculat) were available during the Easter festivities.

This is the first time that air freight has been used to transport klipfish across the Atlantic. It was sent in four trailers by road from Aalesund to Belgium. From there, it was flown over in two chartered Boeing 707 aircraft.

A group of Mexican wholesalers paid in advance for fish and transport.

Despite the many outlets, Norway is also giving some of her fish away -- to developing countries. Over the next two years, she will contribute fish worth about £17 million to the United Nations World Food Programme.

### News in brief

#### First for eels

EEL producers in Taiwan are finding their way into a new and promising market. The first ten tons of a 30-ton order for frozen eels (placed in September 1977) was landed in Hamburg in February.

The order was agreed between a Taiwan sales mission and German importers. It is reported to be Taiwan's first eel sale to a European country.

#### Freezer space

THE state-owned Shipping Corporation of India (SCI) is to operate two ships a month with freezer space to carry seafood exports from Cochito Japan.

Each ship will have 50,000 cu. ft. (1,416 cu. m.) of refrigerated capacity for frozen products such as shrimp. Transport will also be provided for seafood exports from the west coast port of Mangalore.

In co-operation with Sodha Steam Navigation, SCI has also started a monthly service from Cochito to the United States.

#### Ecuador contract

THE British firm of consulting engineers, Rendell Palmer and Tritton, has been awarded a contract for the design of fishing ports at Manabi and Potosia in Ecuador. The framework for port facilities will cost an estimated US\$6 million, with a further \$2 million to be spent on associated industries.

#### Process plant opens in Chile

A JOINT Swiss-Chilean company, Alimentos Philroy (Chile) Ltd., has just opened its new processing plant. Under construction over the past year, the factory is near the Bay of Concepcion in Talcahuano.

On the plant site are several new buildings, including an unloading area for fresh fish and shellfish, a filleting and packing room, freezers and administrative offices.

#### Date to go metric

JANUARY 1981 has been set as the tentative date for the metric conversion of Canada's fishing industry. The conversion plan has been drafted and is to be presented to members of the industry for their comment and approval.

The plan identifies 12 main "activity areas" in the conversion process. They include measurement units; production processes; equipment, marketing, training and public awareness.

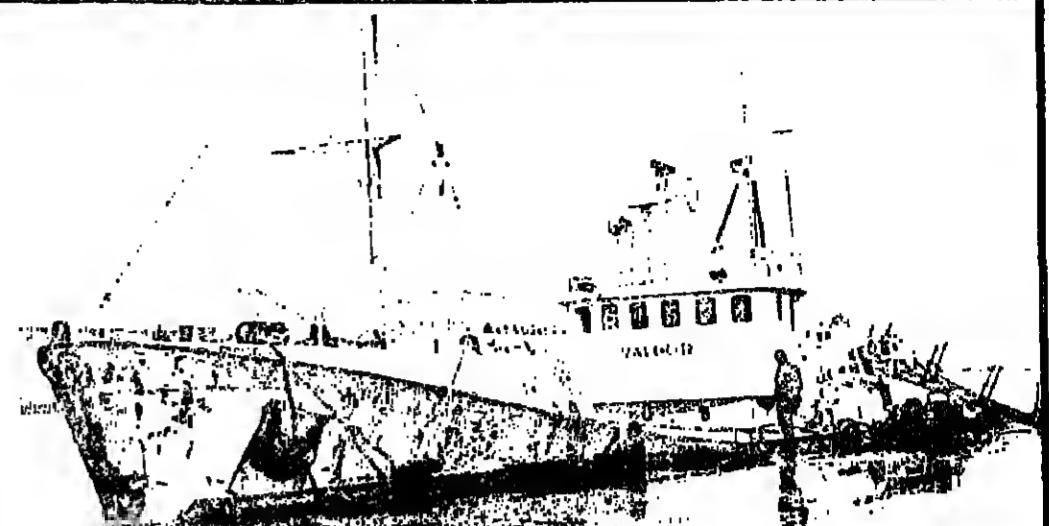
Alimento Philroy is to be used to freeze lobsters (Chiles), abalone, merluza (halibut), jurel (jack mackerel). Lobes, which are selling well in Japan and the United States, will be the company's first export. This will be followed by frozen fish fillets for European and US customers.

## HULL ENDS ITS ICELANDIC LANDINGS BAN



ANOTHER hatchet in the Britain-Iceland "cod war" over the fishing limits was quietly buried in March when the Icelandic trawler *Valthor* came into Hull to land a 65.5-ton catch which sold for £28,278. Included in the landing was just over 40 tons of cod which sold for an average of £438 a ton. A few days later the 385-ton stern trawler *Dagny* came in to land 112 tons which earned £84,756.

With Grimsby and Fleetwood, Hull was badly

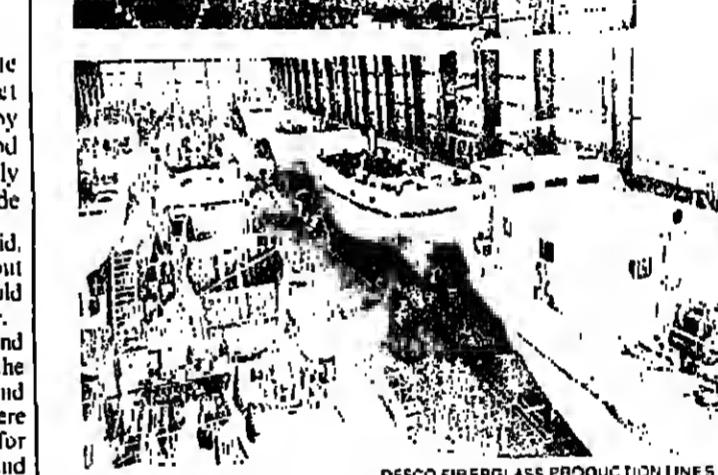


affected by the Icelandic ban on British fishing inside her 200-mile limit. At all three ports stowaways over a year ago refused to handle fish from any Icelandic ship. Last month the ban was still in force in Fleetwood and

The small trawler *Valthor* lands 65.5 tons to end the ban on Iceland landings

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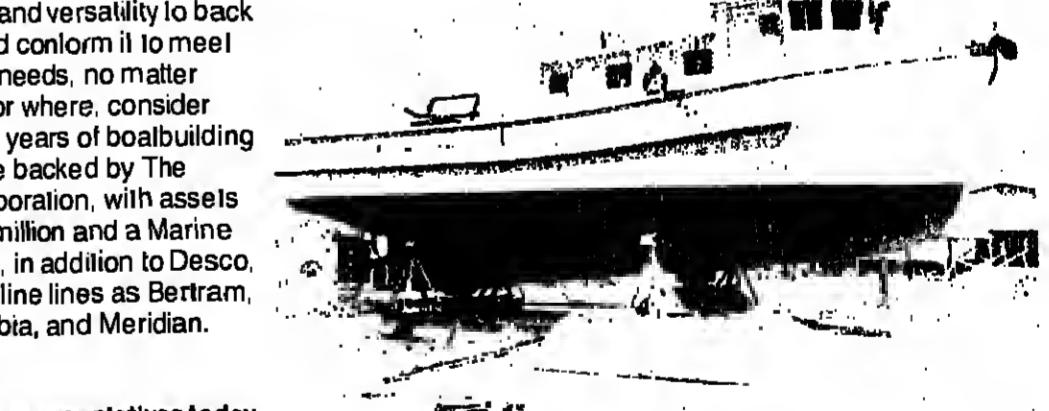
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TOP: DESCO FIBERGLASS BOAT

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## THE MINI FISHERMEN



Subsistence fishermen working a communal trap fishery, on a large Central African river.  
PICTURE: FAO

by Dr. ANDRES  
von BRANDT

LAST MONTH in Part One, I explained how subsistence fishing could be divided into four broad groups, each of varying levels of technical effort.

These levels range from gathering of aquatic animals or plants to methods employing simple tools, traps or hooks. Application or more technically advanced gear assumes the ability of the fisherman to purchase it and to maintain it in good order; also the technical ability to use such equipment effectively.

In this category, we might include netting traps, scoop nets, slow nets and hand-towed dredges; also lift nets, falling (cast) nets, small seines pulled manually between two poles and drive-in nets (which require co-operative effort). Finally, there are gill nets, tangle nets and trammels, of which gill nets are the most significant in subsistence fishing.

Also, gear for this fishing may be simplified for ease of transport, handling and repair — probably by one man. They may even be "slightly illegal" poaching nets.

Lack of size or complexity may often be more than compensated by the subsistence fisherman's superior knowledge of the habitat and the behaviour of his quarry — a type of knowledge which tends to increase as methods become more highly developed.

Large-scale gear cannot be operated in a subsistence fishery, and this applies also to permanent static devices which require constant supervision. One possible exception may be the stone walled weirs found in tidal waters in which fish may be stranded on the ebb tide — a method so old that it has been described as a "living fossil of the oldest fishing gear."

### Labour

Subsistence fishing is based on cheap and plentiful labour, which is why it can survive us personal-use fishery despite efforts at mechanisation.

Although fishermen work as one-man units, this does not prevent them working in groups, each with his own gear, such as a cover pot, or cast net.

The beginning of collective fishing may be the communal building of a stone weir, or driving fish into a jointly operated net. The gear may be jointly owned — for example, individual drift nets or lines within a fleet, or multi-bagged seine nets, in which case each gear owner may receive the catch made by his section.

One of the features of subsistence fishing may be the division of labour according to sex and age. For example, women and children may be restricted to the gathering of food along the shoreline, perhaps plucking for fish in the manner of the original Japanese Amas; or using



Many subsistence fishermen go into the water for their catches. Here, a fisherman in Hungary clears his coverpot.  
PICTURE: E. SOLYMOS

simple fishing gear such as hand lines, scoops, lift nets and cover pots — but not cast nets.

Whenever the fishing method involves swimming, diving or the use of a boat, or whenever greater physical strength is required, this is work for men. Likewise the "hunting" methods for catching large fish using a spear, harpoon, bow and arrow or blow pipe.

### Body power

The same applies to multi-hooked lines, large nets and cast nets, which may require more body power to operate them. Sometimes older men, no longer able to operate such gear, have a special dispensation which allows them to use methods normally forbidden to younger men.

Old men may also be among those experienced in net-making and repair, which is often a matter of ritual and forbidden to women. But the use of manufactured netting is spreading into the subsistence fishery, though such netting may not always be suitable for its purpose.

### Flooding

In the many subsistence fisheries which depend on the periodic flooding of low ground, fishermen may cover more area by wading and swimming, though such operations may be limited by low water temperature, even in the tropics. A wading fisherman can search for fish in the sand or mud with his foot, while a swimmer can tow trolling lines or lay set lines, gill nets and tangle nets in deeper water.

Sometimes a net is rolled around bamboo poles for easy transport by a swimmer, who

# Part TWO

## THE BIGGEST MAY NOT ALWAYS BE THE BEST

anchors and sets the net by diving. The catch is placed in floating pots, on rafts or in accompanying boats.

Lures can be set from a bench by casting or even by lowering them out by means of a kite when the wind is offshore — a method known both in Europe and the Far East.

### Carrier boat

The use of ancillary equipment in swimming and diving is rare, possibly due to cost and because there are times when even a simple raft will hamper a fisherman. But in non-tidal lakes and channels they can serve a useful purpose. A manually propelled boat can extend fishing possibilities, as when a large group of some ten swimmers may be accompanied by a boat carrying the net and the catch — but not the men.

Rats and huts can be used in a subsistence fishery only when they are easily and cheaply obtained. Bamboo makes ideal material for rats, but bamboo of sufficiently large diameter is becoming scarce in some areas and in Taiwan tubes of PVC have been used as a substitute.

Where rats have to land on a soft beach, a flat bottom is necessary, which does not make for good handling. Canoes are better, but they may be heavy and need many people to manhandle them into and out of the water, so that many subsistence fishermen use "boat substitutes."

These may be boxes, barrels or, in Thailand, boxes made of expanded plastic. In such cases, hand or leg propulsion is the rule, though motorised rafts are used in Ceylon, India and Taiwan.

### Next stage

Subsistence fishing can sometimes be developed beyond its basic personal-use level into a small-scale production fishery — subject, of course, to proven resource availability. The problem then is to introduce new materials for gear, new and improved fishing methods and assistance in the purchase or construction of suitable boats or canoes.

All too often, the subsistence and small-scale fisheries are in need of proper advice and assistance when purchasing materials; all too often it is a matter of buying whatever is available. This is often low quality synthetic yarn of sub-standard strength; monofilaments of poor transparency; netting of incorrect yarn and mesh size; and floats of the wrong type or size, sometimes cut down from old floats found along the shore.



Not all subsistence fishermen have three stalwart sons to help move a big net. Type and size of gear may be determined by the ability to transport it.  
PICTURE: FAO



Simple fishing at its simplest. While two men in this Turkish river beat the surface, a third holds a scoopnet underwater to catch the fish.

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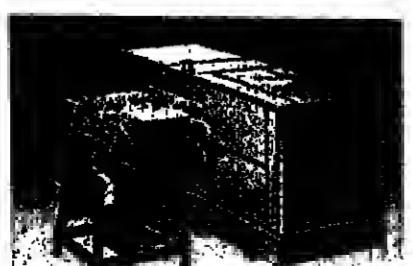
## Scania is around where the 80's are planned

Ships of all kinds need powerful and efficient engines that are economical and reliable in operation. Engines that will have to manage hard work, often with high continuous output. Engines, perfectly adapted to their duties to give maximum power.

Where others only deliver engines, Scania also delivers long experience and know-how. To Scania it is more important to offer the proper solution than just to get an order.

Scania is around when the ships of the 80's are taking shape on the drawing board. This ensures that a Scania diesel is always perfectly adapted to its duty.

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SCANIA MARINE DIESELS ARE AVAILABLE IN SIZES FROM 39 kW 100 bhp TO 292 kW 397 bhp.

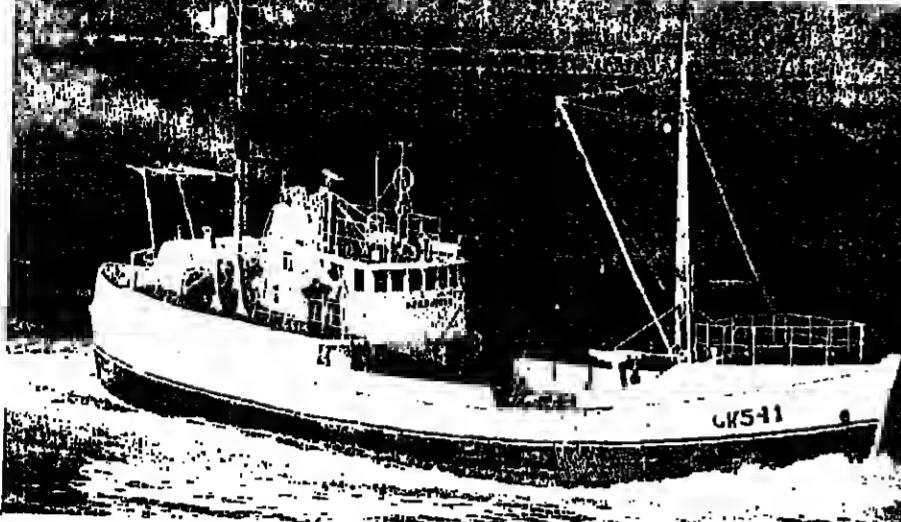
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Boats are simple and small. Turkish fishermen catch migrating blue fish in the Bosphorus.

# NEW ENGINE FOR ICELAND BOAT



The Thorbjorn... greatly improved performance

FISHING vessels are among the work boats in European waters which are providing a growing market for the new-generation Cummins K series diesel engines.

"The 19-litre KTA-1150-M straight-six and the 37.7 litre V12 known as the KT 2300-M are proving worthy companions to engines like the well-tried VT-1710-M in our range of marine units," says Cummins.

One interesting trawler installation of a KT-2300-M is

## product news

### METHODS • GEAR • EQUIPMENT • PLANT • COMPANIES

the 131-ton Icelandic vessel Thorbjorn, operating from the Vestmann Islands.

#### Replaced

This vessel is 13 years old and her owner, H. Thorkotustuda, decided the time had come to replace her original 600 hp engine. Having previously operated two boats with Cummins engine, he chose the new 700 hp V12 unit.

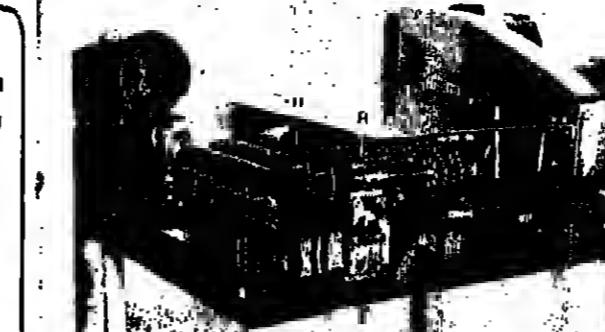
Repowering the vessel involved a change in the engine room foundations and re-routing the exhaust system. The Icelandic agent, Bjorn and Heildor, produced a

special front-end power take-off. Through a Twin Disc clutch, the PTO drives the vessel's hydraulic winches.

With her new engine, the free-running speed of the Thorbjorn — at 1,800 rpm — has increased by more than 10 per cent to 12.2 knots.

An example of Cummins repowering of a smaller vessel is 75-ton mussel boat in Holland. This boat — the BRU 14 — had her 240 hp engine replaced by a KTA-1150-M unit developing nearly twice the power — 470 hp which gives her a speed of up to 11 knots loaded.

This boat was re-engined following lengthening of her hull to 28.5 metres.



## Sardine scaler

A MACHINE to scale sardines without damaging the fish has been introduced by General Fish Machine Company of Wakefield, Massachusetts.

It automatically adjusts to the size of each fish up to 3 oz. (84 grams) in weight. To assure a high quality finished product, it will not cut the fish or damage the skin. It processes 60 a minute by hand and up to 200 a minute when linked to an optional feeder.

The machine is made of corrosion resistant materials. Scalers are of PVC with stainless steel knives. Gears are bronze and oil bearings are equipped with Alemite fittings.

Mounted on a hot-dipped galvanised frame, the machine is powered by 0.5 hp waterproof electric motors.

Further information from General Fish Machine Company, 105 Foundry St., Wakefield, Massachusetts 01880, USA.

## Chileans consider Autoline

THE FIRM O. Mostad of Norway has been showing interest in introducing its Autoline system to vessels in Chile.

Gear technologists in Chile and a number of people in fishing companies feel the system could be used particularly in fisheries for the congeria (eusk eel), corvina and sterna as well as for several species of bottom fish not easily reached by trawls.

It might also be adapted for some of the under-utilised species such as grenadiers and sharks.

Another possible use might be in areas such as south of the 39th parallel where the harsh weather inhibits fishing, but where there are resources that might be able to support some substantial fishery industries.

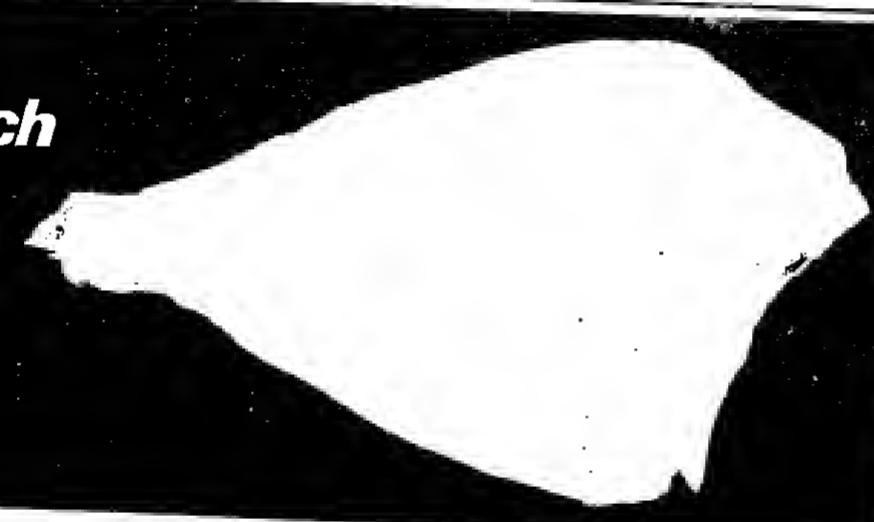


had broken the record three times in four trips.

"In the Victory," said Walkley, "we have the combination of a first-class crew using a first-class trawl and that is how they keep breaking records."

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## NEW TRAWLERS FIT MARCONI

FOUR NEW 79 ft. (24 metre) compact stern trawlers being built for Boston Deep Sea Fisheries in England are being equipped with communications equipment, fish finders, talk-back and entertainment systems and liferaft transceivers by Marconi Marine. A Chilbury Mariner 16 transceiver will provide emergency liferaft communications facilities.

The vessels, building at Richards (Shipbuilders) Ltd.,

## SRI LANKA ORDERS 260 ENGINES

THE Sri Lankan government has placed an order with Perkins Engines Group Ltd. for 260 marine diesel engines and associated equipment worth about £500,000.

"The order," says Perkins, "was won against severe competition from other marine diesel manufacturers." It is 20 years since the first three-cylinder Perkins engines were bought by the Ceylon Fisheries Corporation. Since then, Perkins has supplied 1,100 engines to the Sri Lanka fleet.

As reported previously in FN, there will be substantial changes in the way these engines are distributed among Sri Lankan boat owners.

The units purchased are three-cylinder model D3.152 engines with a special rating of 36 shp at 1,800 rpm. They will be installed in 26 to 28 ft. boats.

Since the late 1950s, Perkins product training school instructors from the United Kingdom have gone out to Sri Lanka to help familiarise boat crews with their engines.

"Sri Lankan fishermen," said John F. Bailey of Perkins, "have shown a strong preference for the Perkins engines because of its fuel economy and its smoothness in operation. This has also no doubt been helped by our comprehensive training programme."

A growing number of countries in the world's developing areas were closely watching the development of Sri Lanka's fishing fleet modernisation programme.

"Perkins can also point to fleet mechanisation successes in Tunisia, where we are helping to transform traditional fishing practices with outstanding results," he said.

This follows trials of the unit in three years at sea aboard a fishery protection ship, and exhaustive physical testing by the Department of Trade.

In a typical installation, the Beaufort/Berwyn unit is fitted between a seahorse slip and a shackle secured to a deck plate. If the ship sinks, the release is operated automatically by water pressure at a pre-set depth.

This allows the liferaft to come to the surface and inflate as the painter line is paid out. A weak link in the system avoids the risk of a liferaft being dragged down with the sinking ship.

The 2950's internal memory circuits have "store and recall" modes. Morrow claims it is the first to offer this feature. The unit also incorporates blind identification, and both internal and external pitch filters.

Compact, lightweight and modular in design, the 2950 has three control switches in full operating view. It is pre-wired for direct output compatible with Morrow's optional RDR-12 remote readout.

## SIMPLE SET



MORROW International Inc of Salem, Oregon, claims that its new model LCA-2950 is the "most simple-to-operate Loran-C on the market." Described as a fully automatic acquisition and tracking dual Loran-C, the LCA-2950 features simple one-button operation, high accuracy and fast acquisition and setting time of up to 120 seconds under normal marine navigation conditions.

It displays two LOPs continuously and simultaneously for faster cross fixes. Digital LOP readout displays are half-in-half-out, amber gas-discharge type. Power consumption is a low 11 watts.

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Compact, lightweight and modular in design, the 2950 has three control switches in full operating view. It is pre-wired for direct output compatible with Morrow's optional RDR-12 remote readout.

THE range of mooring lines available from British Ropes Ltd. is listed and described in a new 24-page brochure.

Included are ropes of man-made fibres and steel wire ropes. Fittings and sundries used with mooring lines are also catalogued.

Handling, care and maintenance of rope is outlined in the brochure, which can be obtained from British Ropes Carr Hill, Doncaster, South Yorkshire, DN4 8DG, England.

#### Rope guide

#### Product

#### Information

#### Order

#### Delivery

#### Warranty

#### Return

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## The books page

# NAVIGATION AIDS FOR SMALL BOATS

**The sea, fish and ships**

THE Seas Must Live is the theme of the latest issue of the Council of Europe's nature conservation magazine *Natura*.

Alan Preston of the Marine Laboratory in Lowestoft considers fish stock management in an article titled "The last herring." One of his conclusions is that at the levels of marine pollutants presently found in the north-east Atlantic "it is unlikely that any deleterious effects exist."

Published in English, French, German and Italian, this issue of *Natura* (No 29) is available from the European Centre for Nature Conservation, Council of Europe, 67006 Strasbourg Cedex, France.

**No-nonsense no-jargon guide by a seaman for seamen**

FISHERMEN have learnt to become wary of books purporting to be guides to their equipment. All too often they are written by engineers talking incomprehensibly about modules or back-up circuits; or they are by technical writers drawing heavily on sales literature put out by manufacturers.

Neither of these criticisms can be made of *Electronic Navigation for Small Craft*. Dag Pike, its author, is a ticketed deck officer who is also an expert in small craft navigation. As a technical journalist (and a regular contributor to *FNI*), he is able to write simply and clearly.

He also has knowledge of commercial fisheries to include much of interest to fishermen in a book reaching to a diverse group of boat owners.

### Echo sounders

The section on echo sounders should be read by fishermen in the context of navigation, not fish-finding, since here the emphasis is on wide beam transducers to increase ground coverage and reduce errors caused by roll and pitch.

Dag Pike has some interesting comments to make on the "electronic" north-sensing compass, and he believes this has a role, outside the usual one of autopilots.

On radio navigation, there is good coverage of RDF and Consul for those not blessed with Decca or Loran, and this is also well explained. The author has a warning for us against the apparent accuracy of three places of decimals provided by certain systems, especially Omega — this is only an accurate computation of the input, which may be subject to considerable error.

He views satellite navigation with favour, however, even for smaller craft, since accuracy is high and corrections are built into the signal; but dead reckoning between fixes must also be reliable, and in this context there is a useful section on both rotating and electromagnetic logs.

### Well produced

Few fishermen will fail to benefit from Dag Pike's new book — and this is an area in which knowledge is safety. It is not a product buyer's guide, although there is a final chapter titled "Value for Money."

*Electronic Navigation for Small Craft* is well produced and illustrated, has 150 pages and an index. It is published by Adlard Coles Ltd, Granada Publishing, St. Albans, England; price £10.00.

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**oil spills  
who  
are  
the  
real  
culprits?**

NORWAY'S fish farming production of salmon and rainbow trout is notable so that a detailed and authoritative work under the title *Salmon and Trout Farming in Norway* is a welcome forthcoming addition to the list of Fishing News Books Ltd.

The 1977 output earned ex-farm, the equivalent of £10 million, most of it being exported to EEC countries whose appetite for both fishes is so considerable that prices run consistently high and the protective duty of four per cent. for their own fish farmers is not even applied to imports. Under those favourable conditions Norway's industry has expanded and now has a bright future.

The author, Dr. David J. Edwards, is British trained and has worked on fish for many years. After being awarded a doctorate by the University of North Wales in 1971, he had four years' experience at Rotorua, New Zealand (a noted trout centre). Late in 1975 he joined the Department of Animal Genetics and Breeding of the Agricultural University of Norway to work on aspects of salmon and trout breeding — notably on selective

address instead of Farnham, Surrey read *Sarnham Survey*; yet the postal genii "surveyed" it properly and it reached us at Long Garden Walk. In this lovely little country town we are good customers of the Post Office and we appreciate their service.

One of the most valuable and appreciated books we have published is the *Multilingual Dictionary of Fish and Fish Products*. This was the outcome of five years of assiduous and devoted work on the part of a team of scientists in many countries who cooperated in the basic enterprise of OECD Paris to provide a standard volume listing the scientific names of commercial fish and products and their equivalent names in 15 other languages of countries with well established fishery industries.

For the purposes of this book he mobilised, as is confessed in a generous acknowledgment, the practical experiences and academic skills of a formidable array of associated local talent so that this work attains high rank in quality and merit.

It contains 12 chapters; these range from the quality of water and the siting of the farm through to every aspect of culture. From that in freshwater to net culture in seawater, and even sea ranching — to marketing, economics and "the future."

Every section is fully covered in text and amply illustrated with a total of 78 figures and 12 tables of supporting statistics. While a few sections of the book that are concerned with local economic and social factors, are of relevance only to Norwegian conditions, others, for example, climatic considerations, apply to all cool temperate regions.

With final production at last in sight — hopefully mid-April on latest advice from the harassed printer and bookbinder — our sales department, ever mindful of customer convenience, wrote to those with long-standing orders to say that although they may understandably have almost given up hope, the books were about to appear — but that in consideration of their unusually long wait their book would be supplied at a concessionary price.

This gesture on our part has brought many appreciative responses. One early one from France read: "You are quite correct in thinking I had given up hope of receiving that book. But it is a pleasure to find that there still exist organisations such as yours who consider customers as an important element for conducting business."

In our book business, we frequently have occasion to appreciate and praise the skill and aptitude of postal officials in relation to the handling of our mail coming as it does from such diverse quarters.

Two recent incidents come to mind. A letter from Germany posted February 21, was delivered in three days, although addressed only "Fishing News Books Ltd, London." It still reached us at Farnham.

Another had the name right but the

TO THE UNINITIATED, trying to sort out which international organisation handles which aspect of marine science, pollution problem or fishery development project is like assembling a jigsaw without a picture.

But puzzles have their solutions, and there is a useful guide to inter-governmental organisations and the oceans. It was compiled last year by Harry N. M. Winton for the Natural Resources Division of the Special Libraries Association. It is available as a 54-page paper (price \$4 with order) from UNIPUB, Box 433, Murray Hill Station, New York, N.Y. 10016.

The purpose of the paper, says Winton, is to indicate the extent to which inter-governmental organisations, in and outside the United Nations system, are concerned with the oceans. He also provides a comprehensive list of their many publications.

One of the largest sections of the bibliography deals with fisheries and with aquaculture. It lists publications on fish stock assessment, fish processing and marketing.

Within the UN system,

FAO, the UNDP, the Asian Development Bank, IMCO and the International Labour Organisation, UNESCO, and the International Maritime Satellite Organization which has spawned from IMCO.

But, most useful of all the bodies listed, is that of the bodies outside the UN. These include the Inter-American Development Bank, the EEC, the International Maritime Commission, the Indian Ocean Commission, the Mediterranean and the Caribbean.

There are other agencies less obviously involved, including the International Labour Organisation, UNESCO, and the International Maritime Satellite Organization which has spawned from IMCO.

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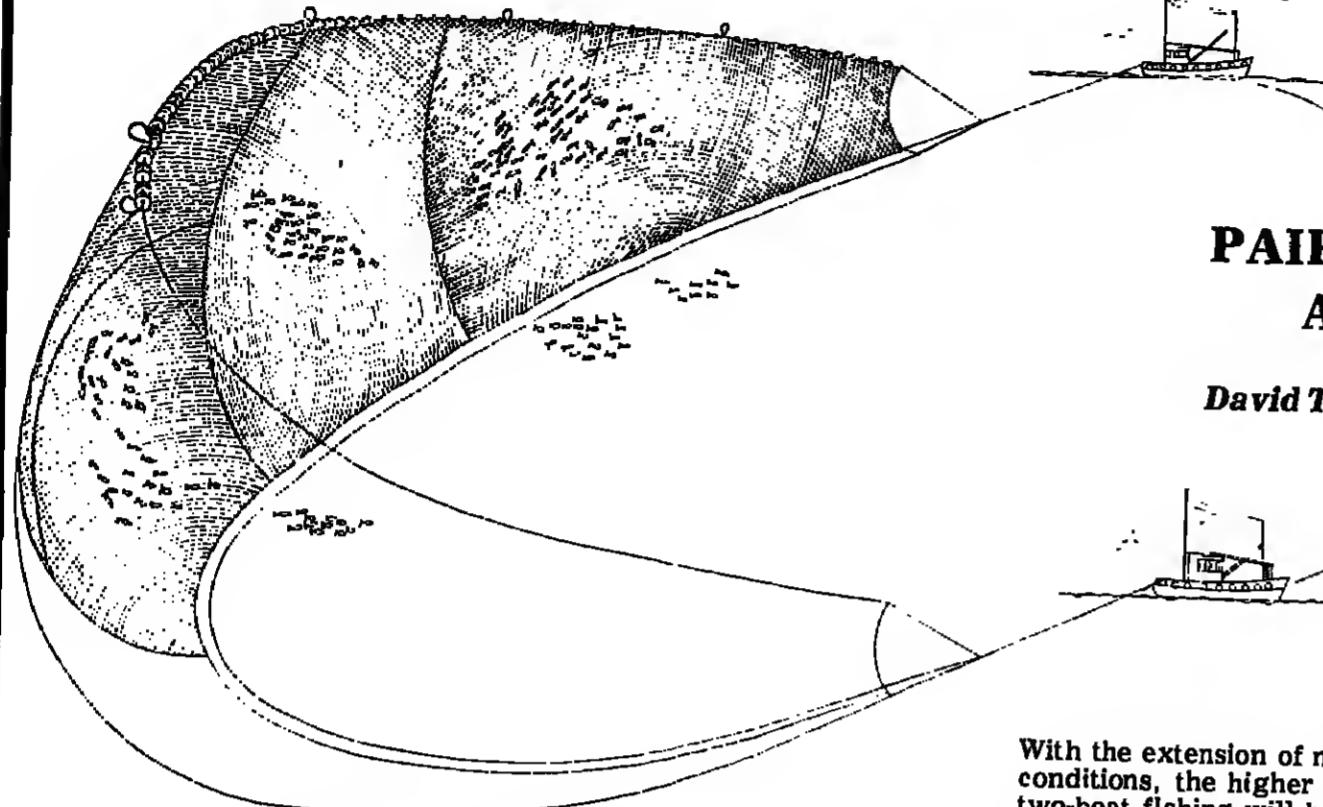
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THE PROCEEDINGS of a Conference on Fisheries mathematics held in Aberdeen, Scotland, in 1975 has now been published under this title.

A wide range of topics is covered, from the preparation by the White Fish Authority of Kingfisher charts using computer-aided cartography to studies of fish migration.

The main emphasis is on recent mathematical developments related to the management of marine stocks.

The book begins with a discussion of primary production in the sea in a chapter on plankton patches in the North Sea. It moves on to development of a stock model for a study of the dynamics of fish populations, and then to the growth, reproduction and mortality of gadoid species.

Now, an Indian specialist in international law, Dr. Rahmatullah Khan, has taken a long, hard look at the problem in a new book, *Indian Ocean Fisheries, The 200-mile Economic Zone\**.

From these three chapters concerned mainly with the dynamics of natural fish populations, the book turns to the population dynamics of fisheries, with chapters on the estimation of fishing mortality.

The last part of the book considers mathematical aspects of fish behaviour significant in relation to catching.

The collection from the conference shows the diversity of fishery problems on which new light can be shed through a mathematical approach and the use of computer techniques.

*Fisheries Mathematics* is edited by J. H. Steele of the Marine Laboratory in Aberdeen and is published by Academic Press, London. Price £8.50.

Copies of *Review 78* can be obtained from Stord Bartz A.S., P.O. Box 5001, Bergen, Norway. It is available in Norwegian, English, French and German.

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SINCE FAME came to the Indian Ocean during the International Geophysical Year, little more appears to have been achieved in assessing accurately its apparently enormous potential. Now that the 200 mile regime has become widely accepted, those states whose coastlines border the Indian Ocean are asking — with some justification — what they have acquired and what they can do with it in terms of exploitation.

Significantly, Dr. Khan spent what was apparently an exciting year at Woods Hole as a post-doctoral fellow in the Institution's Marine Policy and Ocean Management Programme (MP & OM).

It seems that this opportunity to interact with other scientists and other disciplines opened his eyes to more than the legal problems attendant on a 200-mile zone. There is also the problem of conserving this huge resource.

To put the problem into focus, Dr. Khan tells us that one billion people — one third of all humanity — live round the Indian Ocean, and a high proportion of them are fishery-dependent. To some extent, this bank is a plus for a better administration for what may well be the last of the world's major undeveloped coastlines.

It is very gratifying to find a study such as this reaching out to world readership.

\* *Indian Ocean Fisheries, The 200-mile Economic Zone*, by Dr. Rahmatullah Khan, 264 pages with Index and references. Published by Ankur Publishing House, Uphar Cinema Building, Green Park Extension, New Delhi, India. Price \$12.00.

## GEAR CHART AIDS

THE FISHING GEAR technologist John Garner has prepared a set of charts showing gear and methods. They are intended as a teaching aid for the industry.

The first chart shows a pelagic, high opening, four seam, single boat trawl with hydrofoil otter boards.

Chart No. 2 is of a deeper, bottom otter trawl for stern fishing.

The other charts include a boat trawl for inshore fishing, a flat shrimp trawl and a standard type otter trawl with conventional boards.

Further information from John Garner, 2 The Link, Carlton, Nr. Goole, Humberside, England.

# AN INDIAN LOOKS AT HIS OCEAN

**The books  
page**

CONTINUED FROM 35

## 12TH ANNUAL

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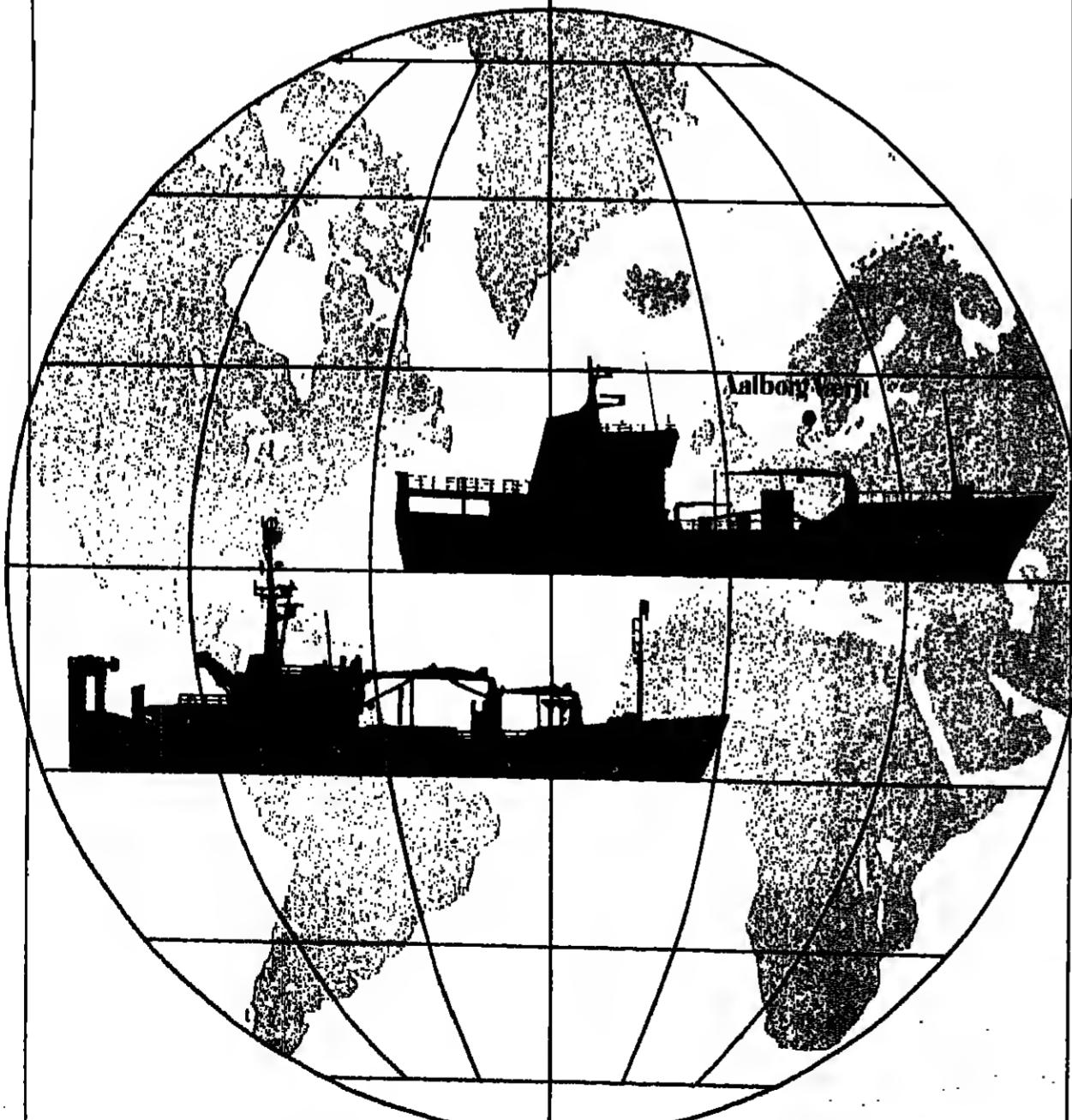
## South Yemen

# Meal factories, canneries and cold stores

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IN AN effort to speed up development of their fisheries, the Government of South Yemen has leaped into industrialisation, being prepared to learn by trial and error and face the cost.

The start was made through joint ventures with the USSR and Japan and in deals with fishery interests in other countries. Commercial fishing began in Aden in 1971 with two Russian vessels.

There are now eight vessels in the project — three owned and two chartered by Yemen, two owned by the USSR, and one research ship.

#### Japanese

The joint venture with the Japanese licences them to catch an agreed tonnage of cuttlefish and squid in Yemeni waters, checked by government officers. In return, the Japanese provide vessels, equipment and services to the value of the catch. They also buy cuttlefish and other species from the Public Corporation for Fish Wealth. The Japanese operated with three ships of 3,000 gross tons each.

Among the "leap into industrialisation" measures taken, the Yemenis bought a fish meal plant of 150 tons a day capacity in 1974. This, located at Mukalla, a main fishing centre some 400 miles east of Aden, is to be increased to 500 tons a day and supplied with sardines by boats bought for this purpose.

#### Seiners

Another big purchase has been that of a floating fish meal plant and seven vessels at a cost of some US\$15 million (see panel). The boats are two second-hand Norwegian vessels, the rest being new purse seiners.

Yet another fish meal plant (150 tons a day) is being built at Khor Umeira, 150 miles west of Aden.

"We now have eight purse seiners with six more on order for delivery later in 1978," said Corporation executive Abo Wahab Sharaf. "We expect the 14 vessels to catch

The People's Democratic Republic of Yemen is one of very small number of countries which regard fish as their most important natural resource. It takes about 130,000 tons a year, but is looking to a catch of 360,000 tons. CEDRIC DAY outlined the fishing prospects of South Yemen in a special report in our March issue. He continues with a brief review of projects in progress or planned which will make this otherwise poor country one of the fishing leaders of the Middle East ...

about 260,000 tons of sardines a year, yielding about 30,000 tons of meal and, of course oil."

Needless to say, the operation of these plants has brought difficulties, as the Yemenis had no pool of experienced engineers and other technicians to man the plants. But, despite the problems and difficulties, progress has been made, with foreign assistance. As one FAO fish industry expert told me, "The Yemenis are working hard in the plants at all levels and they are learning fast."

Similarly, ventures into cannery have faced various problems. For example, the Japanese-built plant at Shugra has been restricted in operation by an early breakdown of machinery. Meanwhile, the USSR is helping to build a 15 million cans a year plant at Mukalla for packing tuna, mackerel, kingfish, sardines and other fish. The factory is scheduled to start production in 1979.

#### Bank loan

Freezing and cold storage facilities are being set up. An international bank loan of US\$6m. is to be used to build an 800-ton capacity cold storage, with a 20 tons a day freezing and ice-making plant, in a fishing centre, and another 150 ton capacity cold storage plant at Shilir, west of Mukalla.

The Chinese are also building an 800-ton cold storage plant, including capacity for freezing and ice-making, at Aden. It will have a workshop for engine repairs, a net-making shed and a store.

Earlier, the Japanese built a 100-ton capacity cold storage and ice-making plant under their cuttlefish agreement.

The Public Corporation for Fish Wealth is building a cold storage plant of about 1,000 tons capacity in Aden and is setting up 21 cold storage facilities along the coast.

## Part two

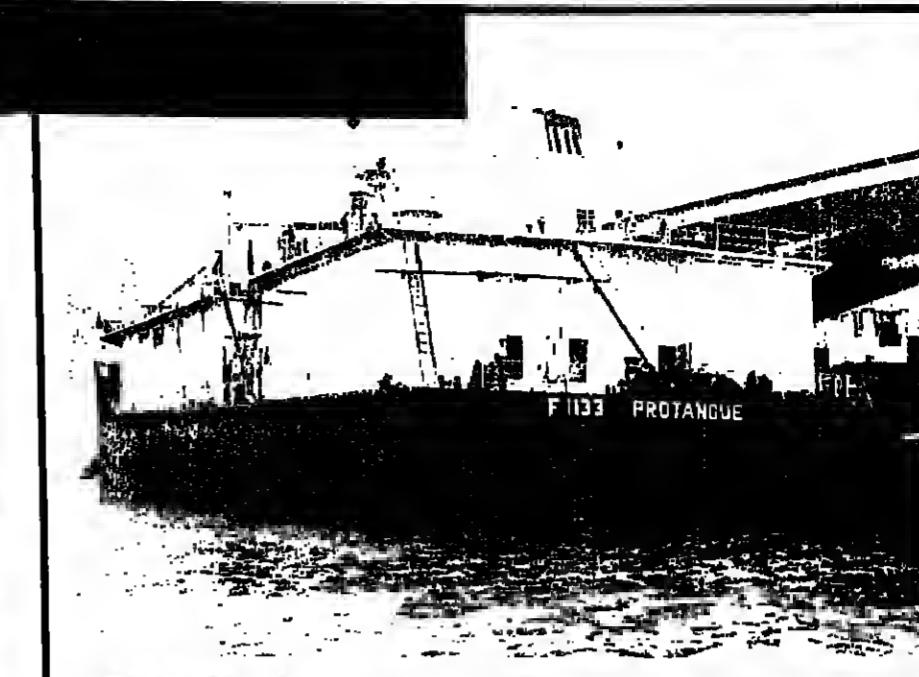


OUR FAO correspondent Cedric Day—pictured above—began his career in journalism and later moved into senior administrative work as director of FAO's activities in Western Asia.

He began with a newspaper in Ontario, Canada, in 1929, moving to the UK in 1934 as a feature writer for Canadian papers. He then extended his activities to write for a number of publications in Britain. After serving in the Royal Navy during World War II, he edited the journal *Weekly World*.

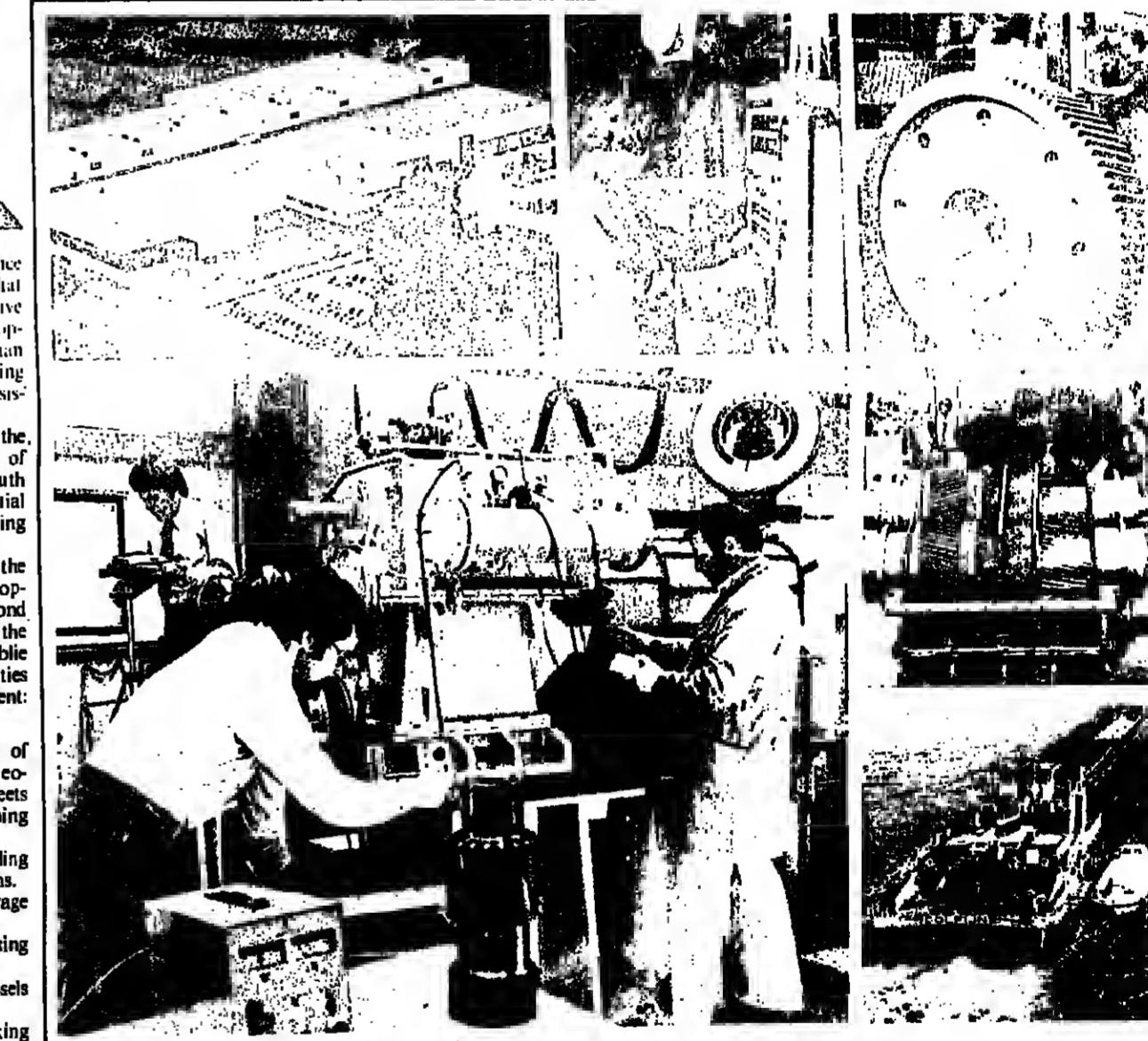
In 1953 he joined FAO, where he rose to chief of features in its information division. Transferred to India in 1963, he was in charge of FAO work in an area that included India, Nepal and Sri Lanka.

Since retiring in 1971, Cedric Day has carried out several assignments for FAO. His reports in *FNI* are therefore based in recent observations, together with long experience of international aid projects in developing countries ...



THE floating fish meal plant mentioned in this report was built by Stord Brætts Industri A/S of Bergen, Norway, in 1972 as the barge *Protangue*. It cost more than £1 million to build and equip, with meal plant able to handle up to 500 tons of fish a day. The *Protangue* was intended for use by a joint venture company set up by Portuguese firms and International Proteins Corporation of the United States.

Although the plant worked well technically, and was operated for a time in southern Angola, the project had supply problems and these led to the transfer of the barge to the Middle East.



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While these priorities indicate the national objectives, I thought it worthwhile to try to find out what the fishermen themselves would specifically like in addition to the Government's programme.

In talks with many of them they told me they would like to have:

Turn to page 47



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**REINTJES**

## India grants import licences

THE Ministry of Agriculture in India has granted 43 licences to companies and other bodies for importing trawlers, reports *FNI* correspondent Trevor Dreicer.

Broad principles guiding the issue were experience in fisheries (including processing and marketing), managerial capability and financial soundness.

The priorities in allocations were public sector corporations, co-operative societies, small and medium fishermen's organisations, and large industrial companies.

It is estimated that about Rs 400 million (£25.5 million) will be needed for the vessel imports licensed.

# IMCO WORKS FOR SAFER BOATS

SIR: Your article titled "Safety rules spread to fishing boats" (February FN) contained many interesting points. But I would like to correct the impression it gave that the Inter-Governmental Maritime Consultative Organisation (IMCO) has so far done little for the safety of fishing vessels. This is very far from true.

Since its inception in 1969, IMCO has devoted much of its time to this matter, and during the 1980s adopted several recommendations which related specifically to fishing vessels, particularly

their intact stability.

In 1973, the Code of Safety for Fishermen and Fishing Vessels was adopted. The second part of this contains safety and health regulations for the construction and equipment of fishing vessels of 24 metres long and over.

In 1977, the Torremolinos International Convention for the Safety of Fishing Vessels was adopted. All of its provisions deal with safety matters. The Convention applies to fishing vessels of 24 m and above. Guidelines are being developed by IMCO for the design, construction and equipment of smaller vessels. It should also be remembered that the IMCO Collision Regulations apply to fishing vessels just as they do to other ships, and I trust that this will show that IMCO is not only aware of the need for greater safety among fishing vessels, but is also doing something about it.

In conclusion, I would like to

## Letters...

POLLUTION PREVENTION, WHICH WAS HELD IN LONDON IN FEBRUARY.

Barely ten months had elapsed since President Carter asked IMCO to call this conference, yet in that time IMCO was able not only to make the necessary physical arrangements, but to evolve complex Protocols to two Conventions and adopt no less than 18 Resolutions.

C. P. Srivastava,  
Secretary-General, IMCO,

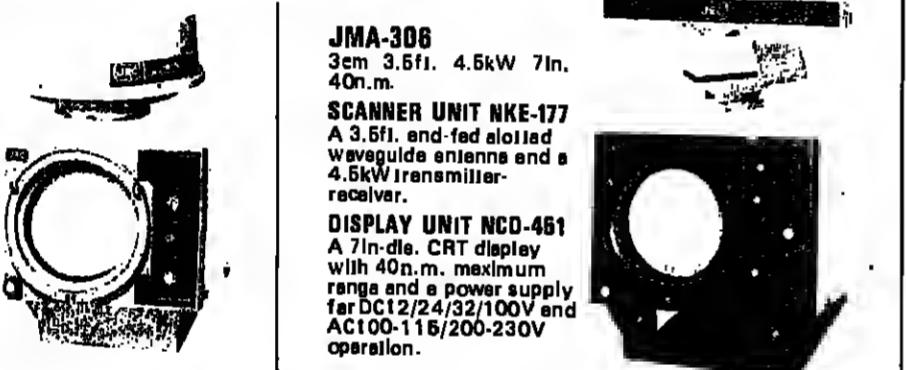
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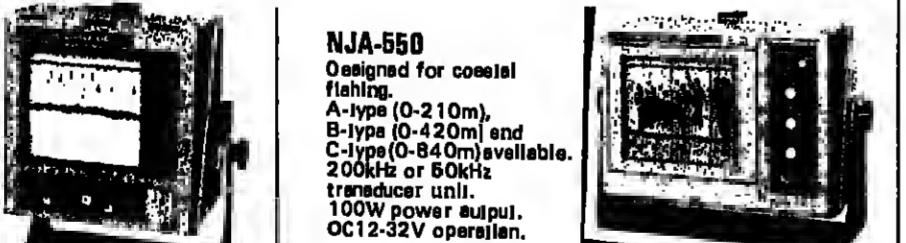
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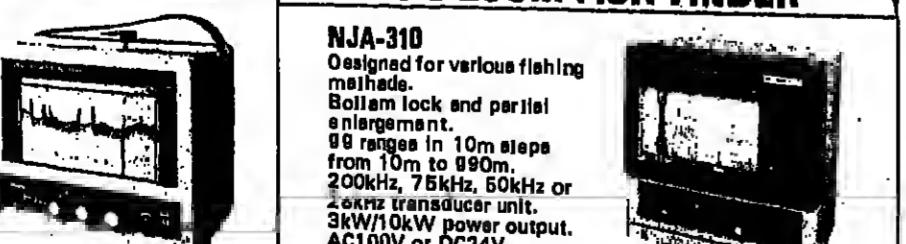
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# Crab fishing at night with pumps

## SIR:

While I liked your review of Gordon Eddie's report on krill (February FN), I cannot help thinking there must be a better way to concentrate these creatures for harvesting than dragging smell-mesh nets through the water with huge trawlers.

Although I have no direct experience with krill, I have observed at first-hand how the red crebs (*Munida gregaria*) concentrate in incredibly dense balls under lights shone at night on the water surface in the southern Chilean channels. I am certain that they could be readily harvested with night lights and pumps.

Some years ago, the FAO estimated that a sustained annual yield could be taken from this species and their relatives in the Chilean channels of 10,000 tons. Air-lift pumps operating just below the water's surface can move enormous volumes of water at a low cost in energy as they

have no gravity head to overcome.

I should think that *Munida* and other galathid species could be harvested relatively cheaply by small-boat night fishing in the protected waters of the channels.

Norwegian tests with krill caught by exploratory fishing vessels have shown that they make excellent salmon and trout feed.

Chunks of frozen blocks floating in the salmon pens melt gradually, allowing the fish in the pens to nibble away at a controlled rate.

I should think that a relatively modest galathid fishery in the southern Chilean channels could provide the feed for an expansion of intensive trout and salmon farming in South America, as well as serve as a proving ground for less energy-demanding techniques for fishing krill on the high seas.

Dr. Timothy Joyner,  
Seattle,  
Washington, USA.

# TRAWLER IS CONFISCATED

A 350-TON trawler arrested off New Zealand on January 25 and found guilty in February of illegal fishing was ordered to be confiscated.

The trawler *Tomi Maru No. 81*, owned by Kani Fishing company of Hokkaido, was brought in by the patrol ship *Pukaki*. She was fishing at the time 65 km off the northern tip of New Zealand. It was an area closed to foreign fishing craft, and she was also using illegal size mesh.

Early in February, her captain K. Okaya and her fishing master Y. Hamada were found guilty in an Auckland court of illegal fishing. The captain was fined \$NZ10,000 on the illegal mesh charge and \$NZ25,000 for fishing in a restricted zone. The fishing master was fined \$NZ3,500 and \$NZ2,500 on the two charges.

## Confiscation

The court also ordered confiscation of the ship, the Magistrate saying that, as the first case of its kind, a warning should be read into the penalties.

Although there has been some comment in Japan on the severity of the penalties, the Minister of Fisheries, Mr. J. B. Bolger, denied any special severity towards Japan. The same sort of action would be taken against any foreign ship found guilty of illegal fishing under New Zealand's new limits laws.

The captain of the *Tomi Maru No. 81* pleaded ignorance of

# POLFISH

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factories and their design staffs to provide practically any type of fishing gear, deck gear or shore equipment.

A novel feature of the Polfish proposals is the use of modular, self-contained "fishing bases," which can be sited on shore or built on pontoons as semi-mobile units to be moored in sheltered water. Each base incorporates a vessel service facility with haul-out or lift for two vessels, plus workshops, fuel and water stores.

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The range of vessels proposed by Polfish begins with combination trawlers, shrimp boats and line boats of around 32 metres. It extends right up to mother ships and includes purse seiners and trawlers.

This means that any type of offshore resource can be fished with the right vessel for the job. As more than 40 types have been supplied to Poland's customers in the past, there should be no problem in finding the right one.

## Many methods

The same applies to gear, which is also to be supplied through Polfish. Polish vessels have fished with many methods and in many waters, while an even greater variety of overseas fisheries have been served by both yard and factories.

This experience enables Polish

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AT A RECENT seminar in Manila, Philippines, participants heard details of an ice plant which its inventor described as "the only one of its kind."

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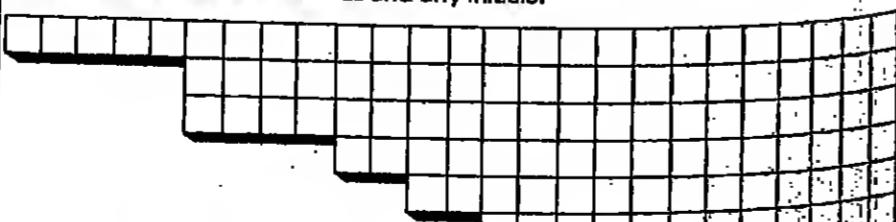
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